ADDENDUM NO. 3
TO
PLANS AND SPECIFICATIONS
FOR
PĀHOA PARK MASTER PLAN
PHASE I
JOB NO. PR-4234
AT
PĀHOA, PUNA, HAWAIʻI
COUNTY AND STATE OF HAWAIʻI

NOTICE TO BIDDERS

The items listed below are made a part of the current contract and shall govern the work, taking precedence over the previously issued specifications and drawings governing the particular item of work mentioned.

PRE-BID CONFERENCE SUMMARY

The summary for the Pre-Bid Conference held on March 25, 2014, including attendance log is provided for the record. 7 pages total attached.

PRE-QUALIFIED AND APPROVED SUBSTITUTIONS

The following items hereinafter listed are approved as equal to the previously specified items, provided all requirements of the contract documents are met.

Approval shall not in any circumstances be construed as an approval for deviations from the contract documents unless the entity seeking such approval has in writing, specifically called the engineer or approving agency's attention to each such deviation at the time of submission. Said entity and / or contractor shall be responsible for the coordination of the work pertinent of the effected materials, equipment and labor to insure proper execution of work as per the intent of the documents.

Section and Paragraph	Specified Item or Product	Accepted Substitution	Remarks
12486	**Balco, Inc., C/S Group, J.L. Industries, Inc., Pawling Corporation, Reese Enterprises, Inc.** Stainless-Steel Floor Grilles	**KADEE Industries KD58** Stainless-Steel Grating	
11680	**GameTime®** Various Components	**Miracle®** Various Components	See attached revised specification section 11680, 15 pages

REQUEST FOR INFORMATION/REQUEST FOR CLARIFICATION

1. **QUESTION***: Sheet G-001, FINISH LEGEND, PT-2 (Sherman Williams 7005 "Sensible Hue"), is not correct. Number 7005 is "Pure White" as indicated in PT-1. "Sensible Hue" number is 6198. Please confirm.*

   RESPONSE: Confirmed. PT-2 is Sherman Williams "Sensible Hue", number 6198.

2. **QUESTION***: Sheet PC102, given dimensions are half of dimensions given on sheet PC101. Please correct.*

   RESPONSE: Dimensions on sheet PC102 will be revised and reissued with Addendum 3.

3. **QUESTION***: Sheet S-PC001, STRUCTURAL GENERAL NOTES, ITEM II, E. Seismic: Occupancy Category is noted as "II". Based on sheet PC001, "CODE SUMMARY", 4.5, Total Occupancy Load = 618. Per 2006 IBC; Table 1604.5, Covered structures whose primary occupancy is public assembly with an occupant load greater than 300, is Category III. Please confirm Occupancy Category should be III will increase wind importance factor to 1.15, and seismic importance factor to 1.25.*

   RESPONSE: The Occupancy of the Play court is "III" not "II". You are correct, the wind importance factor is 1.15 and seismic is 1.25.

4. **QUESTION***: Sheet S-PC001, STRUCTURAL GENERAL NOTES, ITEM II, C. Design Dead Loads does not appear to be complete. Please confirm we are to follow Specification Section 13120, 1.05, A.1, with the exception of A.: 1.c – Collateral Loads (see next question).*

   RESPONSE: The Collateral load should be 7 psf, 4 psf for designed electrical and mechanical, plus 3 psf for a possible future PV system.

5. **QUESTION***: Specification Section 13120, 1.05, A. 1.c, indicates collateral loads of 3 psf. A review of the covered playcourt design and our attached exhibit "A", collateral load should be a minimum of 4# (1# lighting, 3# Fire Sprinkler). Please confirm collateral load shall be a minimum of 4#, with no future anticipated loads of PV, Solar Panels, or other mechanical units.*

   RESPONSE: The Collateral load should be 7 psf, 4 psf for designed electrical and mechanical, plus 3 psf for a possible future PV system.

6. **QUESTION***: Sheet S-PC001, STRUCTURAL GENERAL NOTES, ITEM 11., D, indicates Building Classification of "Enclosed/Opened". Specification Section 13120, 1.05; A.3, indicates classification as "Partially Enclosed". Please confirm we are to design building classification of "Partially Enclosed" per Specs.*

RESPONSE: The classification should be partially enclosed/enclosed. The Pre-Engineered metal building portion of the building is partially enclosed and the CMU portion of the building is enclosed.

7. **QUESTION***: Sheet S-PC001, PRE-ENGINEERED METAL BUILDINGS, NOTE 2, indicates maximum deflection of H/150. Specification Section 13120, 1.05, B, indicates maximum deflection shall be H/200. Please confirm maximum deflection of H/200 is desired.*
   RESPONSE: The allowable deflection should follow the written specification and shall be H/200.

8. **QUESTION***: Specification Section 13120, 1.04, E., indicates maximum roof purlin spacing of 4'-0". Please confirm metal building manufacturers are allowed to space purlins up to 5'-0", provided roof, wall, and soffit panels are able to meet the design loads and codes.*

   RESPONSE: The purlin spacing may increase to 5'-0" provided it meets all design and code criteria.

9. **QUESTION***: Specification Section 13120, 2.01, B., ROOF PERFORMANCE TESTING –*
   A. Please confirm actual roof system construction shall conform to UL580, Class 90.
   B. Pelase confirm actual roof system construction shall <u>not</u> require FM Global standards.
   (FM Global standards are above and beyond essential or emergency shelter designs)

   RESPONSE: The roof system shall conform to UL580, Class 90 standard. FM GTlobal standards are not required for this project.

10. **QUESTION***: Agenda of Pre-Bid Meeting held on March 25, item II, F, indicates bid opening of April 25, 2014. Please confirm bid opening is April 24, 2014.*

    RESPONSE: Bid opening shall be May 1, 2014 at 2:00 p.m.

11. **QUESTION***: A preliminary design of the metal building system for the covered palycourt requires 2 bays of rod bracing along gridline A.9. Please confirm the rod bracing will be allowed between gridlines 3-4 and 11-12. Note rod brace at gridlines 11-12 will require the door to be relocated to center of the bay.*

    RESPONSE: Confirmed, vertical bracing along gridline A.9/3-4 and A.9/11-12. Door at gridline A.9/11-12 can be centered if needed.

12. **QUESTION***: Section A2/PC602 indicates overhang dimension of 4'10" from gridline 14. To maintain the 2' wide roof panel modularity, please confirm the dimension should be 4'-8".*

    RESPONSE: Confirmed, dimension should be 4'-8" from gridline 14.

13. **QUESTION***: Plan sheet PC105 indicates roof to be RF-1. Please confirm roof to be RF-2.*

    RESPONSE: Confirmed, call out on sheet PC105 should be RF-2.

14. **QUESTION***: A2/PC201Elevation – South indicates wall panel at gridline 1 overhang to be MP-1. Please confirm wall panel should be MP-2.*

    RESPONSE: Confirmed, wall panel should be MP-2.

15. **QUESTION***: Plan sheet PC102 indicates wall panel to be MP-1 (call out near gridline I/J). Please confirm wall panel to be MP-2.*

    RESPONSE: Confirmed, wall panel to be MP-1.

16. **QUESTION***: B2/PC401 indicates "6 ½" Wide Metal Trim, Typ." It appears this trim is also located along the CMU wall. If the metal trim is also needed along the CMU wall, what is the width of the perforated soffit panel as noted in A2/CB601?*

    RESPONSE: Perforated soffit panel to be 6" width.

17. **QUESTION***: Tube steel header in Section A1/PC515 appears to conflict with details A2 and A4 on same sheet. Please confirm tube steel should be a C8 x 13.75 as indicated in A2 and A4.*

    RESPONSE: Pre-Engineered Metal Building Contractor to provide shop drawings for tube steel sections and sizes.

18. **QUESTION***: Wall section B3/PC601 indicates wall panel MP-1 on Entry side of gridline B.9. Since building is completely fire sprinklered, please confirm the wall panel to be MP-2.*

    RESPONSE: Confirmed, wall panel to be MP-2, Fascia to be MP-2.

19. **QUESTION***: Specification Section 13120, 2.01; I.2 indicates "THERMAX" insulation thickness: 4" maximum. A 2-1/2" thickness of "Thermax insulation will yield a U-factor and Nominal R-value of 0.059 and 16.9, respectively. Please confirm 2-1/2" thickness of Thermax insulation is appropriate.*

    RESPONSE: Insulation thickness to meet IECC requirements.

20. **QUESTION***: Specification Section 13120; 2.4 A, indicates requirement for glass-fiber board insulation. Interior section views of the Covered Playcourt indicate there is no interior liner panel being used, and therefore the unfaced glass-fiber board will be exposed. Please confirm use of glass-fiber board insulation at playcourt or provide 3" blanket insulation with WMP-50 facing.*

RESPONSE: Use insulation board per specifications.

21. **QUESTION***: Sheet C-301 – Overall Grading Plan indicates grading limit to include Multi Use Field and Youth Baseball Field, although border line between phase 1 & phase 2 on this sheet indicates these two amenities are in phase 2. Please advise if Multi Use Field and Youth Baseball Field shall be included in this bid, we understand that Alternate 4 – Deductive is related to omitting east multi-purpose field, shall this alternate include deducting Youth Baseball Field as well?*

    RESPONSE: Multi-Use and Youth Baseball fields are included in Phase I Scope of Work. Per specifications, Alternate No. 4 (DEDUCTIVE), is for omitting East Multi-Purpose Field only.

22. **QUESTION***: Bid Schedule – Alternates Area Limits. In order to avoid any confusion and to have all bidders price the alternates accurately by including same scope / areas, we respectfully ask to provide clear lines on the drawing to identify alternate areas? In this case evaluation of bid award will be fair to all bidders in case alternates are considered in award evaluation.*

    RESPONSE: On all overall Civil site drawings, proposed phasing scope of work is clearly labeled and delineated. Dashed lines indicate extent of enlarged, partial site plans.

23. **QUESTION***: Site Plan C-103 shows the appearance of 4 sets of bleachers between the parking lot and Multi-Use Field #2, however they are not called out. Are these new bleachers required in this project's scope of work?*

    RESPONSE: Yes, four (4) sets of 21' long, 5 tier high bleachers are required to be furnished and installed at the Multi-use field #2 as part of this project.

24. **QUESTION***: Site Plans C-104 & C-105 shows the appearance of 10 sets of bleachers at each baseball field, however they are not called out. Are these new bleachers required in this project's scope of work?*

    RESPONSE: There should be six (6) 21' long, 5 tier high bleachers at the baseball fields. Three (3) at each field. One (1) bleacher should be installed at each dugout for a total of four (4) 21' long 2 tier high.

25. **QUESTION***: Dugout Details AX-101 calls out a set of bleachers in each dugout (aluminum, 2-tier, double foot boards). This is the only bleacher detail provided in the plan set, and there is no specification section covering them. Does this detail apply to all outdoor bleachers in the project? Are there any additional specifications or dimensions to be met?*

RESPONSE: * Playcourt bleachers: 3-tier with built in rollers. Twelve (12) total bleachers.
***** High School baseball field dugouts: 2-tier. One (1) per dugout.
* High School baseball field spectator: 5-tier. Three (3) total bleachers.
* Youth baseball field dugouts: 2-tier. One (1) per dugout.
* Youth baseball field spectator: 5-tier. Three (3) total bleachers.
* Main (west) multipurpose field: 5-tier. Four (4) total bleachers.

26. **QUESTION***: Site Plans C-104 & C-105 call out a Home Plate and a Pitcher's Mound at each baseball field, however they do not call out any base plates. Please advise what is to be provided in this project's scope of work.*

    RESPONSE: All of the bases for both fields shall be provided as part of the project.

27. **QUESTION***: Section 11484 is for Exterior Scoreboards, however the site plans for the ballfields do not call any out and there are no plan details for them. Are any exterior scoreboards to be provided in this project's scope of work? If so, please provide quantities and locations.*

    RESPONSE: * High School baseball field: One (1) exterior scoreboard located in the left field area.
    * Youth baseball field: One (1) exterior scoreboard located in the right field area.
    * Main (west) Multipurpose field: One (1) exterior scoreboard located in the south end zone area.
    * Please include an ADD ALT for Secondary (east) Multipurpose field: One (1) exterior scoreboard located in the south end zone area.

28. **QUESTION***: [If Exterior Scoreboards are required for this project] Section 11484 is for Exterior Scoreboards: 2.03 Baseball/Softball Scoreboard (Nevco #1506); 2.04 Football/Track Scoreboard (Nevco #7530); and 2.05 Soccer Scoreboard (Nevco #3555) - however there are only two different types of fields (baseball fields and multi-purpose fields). Please clarify what type of scoreboard is required at each area.*

    RESPONSE: Exterior scoreboards for High School baseball, Youth/Softball and Main (west) Multipurpose field are part of the scope of work for this project.
    * High School baseball field: One (1) exterior scoreboard.
    * Youth baseball field: One (1) exterior scoreboard.
    * Main (west) Multipurpose field: One (1) exterior scoreboard.
    * Please include an ADD ALT for Secondary (east) Multipurpose field: One (1) exterior scoreboard.

29. **QUESTION***: [If Exterior Scoreboards are required for this project] Section 11484, 2.07 specifies a Game Delay Timer, 2.08 specifies a Control Center, and 2.09 specifies a Carrying Case. Please confirm if one of each of these is required for each exterior scoreboard.*

    RESPONSE: Confirmed, each item is required for each scoreboard per specifications.

30. **QUESTION***: Playcourt Plan Page PC-511, detail B1 is for a "Portable Basketball Backstop System", however the building plans only show the overhead suspended basketball backstops. Please provide quantity of these portable systems if they are to be furnished in this project's scope of work. If it is one per Biddy Court, then the quantity would be four.*

    RESPONSE: Provide Twelve (12) "Portable Basketball Backstop System" in addition to the overhead, suspended, motorized basketball backstops.

31. **QUESTION***: Playcourt Plan Page PC-302, Note #26 requires that all columns have protective padding installed. Please provide thickness of padding.*

    RESPONSE: Refer to specification section 11482, Part 2.04.C. Padding to be not less than 1-1/4".

32. **QUESTION***: Playcourt Plan Page PC-302, Section B2 indicates three mounted scoreboards. A2 shows none, so it appears that there should be a total of three (x3) mounted scoreboards in the playcourt. Please confirm.*

    RESPONSE: Provide Three (3) mounted scoreboards.

33. **QUESTION***: [If total quantity of Interior Scoreboards is three] Playcourt Plan Page PC-501, detail B3 shows that each scoreboard is to be 7' wide x 5'-6" high. Section 11483 for Interior Scoreboards lists two different specified scoreboards; 2.03 Multipurpose Scoreboard (Nevco #2750-NL) which is 8' wide x 6' high and 2.04 Tennis Scoreboard (Nevco #9652) which is 9' wide x 4' high. Please confirm (1) which is the correct scoreboard to provide, or if the three scoreboards are each different – how many of each; and (2) do the dimensions of the specified scoreboards supercede the dimensions shown in the plan detail.*

    RESPONSE: Follow dimensions for Nevco #2750-NL.

34. **QUESTION***: Playcourt Plan Page PC-101, calls out six sets of bleachers, however there are no details or specifications. Are these new bleachers required in this project's scope of work? Are there any details, specifications or dimensions to be met?*

    RESPONSE: * Playcourt bleachers: 3-tier with built in rollers. Twelve (12) total bleachers.
    ***** High School baseball field dugouts: 2-tier. One (1) per dugout.
    * High School baseball field spectator: 5-tier. Three (3) total bleachers.
    * Youth baseball field dugouts: 2-tier. One (1) per dugout.
    * Youth baseball field spectator: 5-tier. Three (3) total bleachers.
    * Main (west) multipurpose field: 5-tier. Four (4) total bleachers.

35. **QUESTION***: Bid Schedule Alternate Deduct No. 4; OMIT EAST MULTI-PURPOSE FIELD – indicates to omit grading. Please clarify if the deductive item scope means to omit fine grading only. According to the proposed grading plan, there is a significant quantity of fill (8' deep) within EAST MULTI-PURPOSE FIELD area, please provide more detail about the modified grading plan / limit for areas adjacent to EAST MULTI-PURPOSE FIELD in case this alternate is exercised. If mass grading of EAST MULTI-PURPOSE FIELD is not performed, it will leave this area in unfavorable terrain may create problem in drainage. Please clarify and identify on the plan area that need to be left at original / existing grades.*

    RESPONSE: See Drawings Sheet C-301 (comments in red). 1 page attached.

36. **QUESTION***: Proposed Secondary Multi-Use Field, Civil plan sheet C-202, keynotes 26 refers to detail 2/sheet C-005 (4" perforated pipe under field with drain rock around it), however keynotes 26 on Proposed Secondary Multi-Use Field on sheet C-203 refers to different detail (detail 2/sheet C-004).*

    A. Please clarify which drainage detail is applicable to the Proposed Secondary Multi-Use Field?
    B. Detail 2/sheet C-005 indicates subgrade slope of 3% and finish grade slope of 1.5% across the field, this makes depth of drain rock 1' at the center line and 3' at the edge of the field. Is it acceptable to change slope of subgrade to 1.5% to match grade slope in this case depth of drain rock will be 1' consistent across the field?

    RESPONSE: See attached Exhibit Drawing Sheet C-301 (comments in red).
    1 page attached.

SPECIFICATIONS

ITEM NO. 1 – Section 00010 – TABLE OF CONTENTS

DELETE in its entirety and **REPLACE** with attached 4 pages.

ITEM NO. 2 – SPECIAL NOTICE TO BIDDERS

DELETE in its entirety and **REPLACE** with attached 4 pages.

ITEM NO. 3 – PROPOSAL

DELETE pages 10-12 in their entirety and **REPLACE** with the following pages 10-12.
3 pages attached.

ITEM NO. 4 – Section 02200 – EARTHWORK

DELETE in its entirety and **REPLACE** with attached 6 pages.

ITEM NO. 5 – Section 02577 – PAVEMENT MARKINGS

DELETE in its entirety and **REPLACE** with attached 2 pages.

ITEM NO. 6 – Section 02740 – SEPTIC SYSTEM

DELETE in its entirety and **REPLACE** with attached 3 pages.

ITEM NO. 7 – Section 02790 – SYNTHETIC TURF SAFETY SURFACING SYSTEM

1. Paragraph 1.05 Submittals, sub-paragraph B, **DELETE** line item 2 in its entirety and **REPLACE** with the following:

   "2. One 18" x 18" shock-absorbing underlayment seamed together along one common edge."

2. Paragraph 1.05 Submittals, sub-paragraph D, **DELETE** "coy" and **REPLACE** with "copy".

3. Paragraph 1.10 Project Conditions, sub-paragraph A, **DELETE** the last sentence and **REPLACE** with the following:

   "Installed work and materials of other trades shall also be protected."

4. Paragraph 2.02 Synthetic Turf, sub-paragraph F, second sentence, **DELETE** "different" and **REPLACE** with "difference". Last sentence, **DELETE** "o" and **REPLACE** WITH "of".

5. Paragraph 2.02 Synthetic Turf, sub-paragraph K, line item 4 Fabric, second item shall be:

   "Tuft bind Min. Avg. 6 lbs."

6. Paragraph 2.05 Drainage System (If Aggregate Bases Is To Be Used), **DELETE** "Bases" and **REPLACE** with "Base".

7. Paragraph 3.06 Testing, sub-paragraph A, line item 4, **DELETE** "0 test per 200 square feet" and **REPLACE** with "1 test per 200 square feet".

8. Paragraph 3.07 Closeout, sub-paragraph C, line item 1, first sentence, **DELETE** "re[airing" and **REPLACE** with "repairing".

ITEM NO. 8 – Section 02821 – CHAIN LINK FENCES AND GATES

DELETE in its entirety and **REPLACE** with attached 7 pages.

ITEM NO. 9 – Section 02900 – LANDSCAPING

1. Paragraph 3.03 Installation of Plant Material, sub-paragraph L – Hydro-Mulching of Grass Seed, line item 1, **DELETE** "(31 lbs. per 900 sq. ft.)".

2. Paragraph 3.07 Maintenance, sub-paragraph B, line item 3, **DELETE** in its entirety and **REPLACE** with the following:

"Mow lawn areas, after grass is established, to a height of 1-inch whenever height of grass becomes 1-1/2 inches tall."

ITEM NO. 10 – Section 02920 – LAWNS AND GRASSES

Paragraph 3.01 Installation and Workmanship, sub-paragraph C – Hydro-Mulching of Grass Seed, line item 1, **DELETE** "(31 lbs. per 900 sq. ft.)".

ITEM NO. 11 – Section 05500 – METAL FABRICATIONS

DELETE in its entirety and **REPLACE** with attached 9 pages.

ITEM NO. 12 – Section 06415 – METAL COUNTERTOPS

DELETE in its entirety and **REPLACE** with attached 2 pages.

ITEM NO. 13 – Section 09680 – CARPET TILE

DELETE in its entirety.

ITEM NO. 14 – Section 10800 – TOILET, BATH, AND LAUNDRY ACCESSORIES

DELETE in its entirety and **REPLACE** with attached 3 pages.

ITEM NO. 15 – Section 11680 – PLAYGROUND EQUIPMENT

DELETE in its entirety and **REPLACE** with attached 15 pages.

ITEM NO. 16 – Section 13120 – METAL BUILDING SYSTEMS

DELETE in its entirety and **REPLACE** with attached 15 pages.

ITEM NO. 17 – Section 15250 – INSULATION OF MECHANICAL SYSTEMS

DELETE in its entirety and **REPLACE** with attached 3 pages.

ITEM NO. 18 – Section 15300 – WET PIPE SPRINKLER SYSTEM

DELETE in its entirety and **REPLACE** with attached 9 pages.

ITEM NO. 19 – Section 15400 – PLUMBING SYSTEM: BASIC MATERIALS & METHODS

DELETE in its entirety and **REPLACE** with attached 6 pages.

ITEM NO. 20 – Section 15450 – PLUMBING FIXTURES AND TRIM

DELETE in its entirety and **REPLACE** with attached 5 pages.

DRAWINGS

DELETE in its entirety Drawing Sheets:

GI001, GI002, GI003, G-001, G-002, G-401 (6 sheets); C-001, C-003, C-004, C-007, C-008, C-009, C-012, C-101, C-102, C-103, C-104, C-105, C-106, C-107, C-108, C-109, C-202, C-204, C-209, C-302, C-303, C-304, C-305, C-306, C-307 (25 sheets); L-101, L-102, L-103, L-104, L-105, L-106, L-107 (7 sheets); FS-G001, FS-PC101, FS-PC201 (3 sheets); A-001, A-002, A-003, A-004, A-005 (5 sheets); PC001, PC101, PC102, PC103, PC104, PC105, PC201, PC202, PC301, PC302, PC401, PC402, PC403, PC404, PC405, PC501, PC510, PC511, PC512, PC513, PC514, PC515, PC601, PC602 (24 sheets); CB101, CB102, CB103, CB104, CB105, CB201, CB301, CB401, CB402, CB601 (10 sheets); CS101, CS102, CS103, CS201, CS202, CS301, CS302, CS401, CS402 (9 sheets); AX101, A-501, A-502, A-503, A-504, A-505, A-506, A-507 (8 pages); S-PC001, S-PC102, S-PC202, S-PC203, S-PC301, S-PC302, S-PC303 (7 pages); S-CB201, S-CB301, S-CB302, S-CS201, S-CS301, S-CS302 (6 pages); S-AX102 (1 sheet); P-PC202, P-PC203 (2 sheets); P-CB301, P-CB302 (2 sheets); EGI002, EGI003, EGI006, EGI007, EGI008, E101, E102, E103, E104, E105, E106, ECB101, ECB102, ECS101, EPC101, EPC102, E501, E601 (18 sheets) and **REPLACE** with attached revised 133 sheets.

EXHIBITS

ITEM NO. 1 – DRAWING SHEET C-301

Refer to RFI Question No. 36. See comments in "red".

ITEM NO. 2 – GEOTECHNICAL INVESTIGATION REPORT

Geotechnical Investigation Report by Construction Engineering Labs dated August 25, 2013
16 pages attached.

Warren H. W. Lee, P.E., Director
Department of Public Works
County of Hawai'i

Date Issued: April 17, 2014

Please detach and execute the receipt below. Return immediately via facsimile (808) 961-8630 or mail to the Administration Office, Department of Public Works, County of Hawai'i at Aupuni Center, 101 Pauahi Street, Suite 7, Hilo, HI 96720-4224.

Receipt of Addendum No. 3 via website for the PĀHOA PARK MASTER PLAN PHASE I, Job No. PR-4234, Pāhoa, Puna, Hawai'i, is hereby acknowledged.

Signed _____ Title _____

Firm _____ Date _____

PRE-BID CONFERENCE

PAHOA PARK MASTER PLAN PHASE I
JOB NO. PR-4234

March 25, 2014 – 11:00 am
Department of Parks and Recreation Conference Room
101 Pauahi Street, Suite 6; Hilo, Hawai'i 96720

AGENDA

PART ONE – OPENING

I. INTRODUCTIONS

A. Owner: .....County of Hawai'i, Department of Parks and Recreation
Director: Clayton Honma; Deputy Director Bob Fitzgerald

B. Owner's Rep.:.....County of Hawai'i, Department of Parks and Recreation
James Komata, Park Planner Project: 961-8311(w)
jkomata@co.hawaii.hi.us

C. Project Management: ...County of Hawai'i, Department of Parks & Recreation
Jeff Ochi, Project Manager: 961-8916(w)
jochi@co.hawaii.hi.us

D. Prime Consultant: .....WCIT Architecture (not present)
(No direct contact by bidders allowed)

E. Self Introductions by all attendees

II. CONFERENCE REQUIREMENTS (§3-122-16.05, Hawai'i Administrative Rules)

A. Attendance of the pre-bid conference is not mandatory and is not a prerequisite for submitting a bid on the project.
B. The purpose of the pre-bid conference is to explain the procurement requirements of this project and to allow potential offerors to ask questions. [§3-122-16.05(a), HAR]
C. Nothing stated at the pre-bid conference shall change the terms/conditions of the written solicitation unless corresponding change is implemented via a properly issued addendum. [§3-122-16.05(e), HAR]
D. A summary of the pre-bid conference, in addition to any changes to this solicitation, shall be issued by addendum. [§3-122-16.05(f), HAR]

PART TWO – PROJECT INFORMATION

I. SCOPE OF WORK

A. Project Location: Pahoa Park, Pahoa, Puna
TMK (3)1-5-002:020

B. This project includes but is not necessarily limited to the following general items of work:

1. Grading of exiting property for new fields, covered play court, ~~scorers booth~~ **Concession**, comfort station, parking areas and other park amenities.
2. The construction of new site drainage system and related appurtenances.
3. The construction of a new covered play court facility and related appurtenances.
4. The construction of new ballfields inclusive of backstops, fencing, dugouts, ~~scorers booth~~ **Concession** and related appurtenances.
5. The construction of new multi-use fields and related appurtenances.
6. The construction of a new comfort station and related appurtenances.
7. The construction of new paved parking areas, paved roadways and related appurtenances.
8. All other related work as shown on the drawings and as specifications.

C. County's Cost Estimate: $20,000,000.00

II. PROJECT TIMEFRAMES:

A. Contract Duration: .....360 consecutive calendar days

B. Commencement Date:.....To Be Determined

III. PERMITTING

A. Building Permit: Department of Parks & Recreation to obtain.
B. Grading Permit: Contractor to obtain, no fee.
C. Plumbing permit: Contractor to obtain, no fee.
D. Electrical permit: Contractor to obtain, no fee.
E. NPDES Permit: Contractor to apply and obtain, Qwner to provide permit fee.

PART THREE – BIDDING INFORMATION

I. BID DOCUMENTS

A. Available for examination at:
1. Hilo: DPW's Admin. Office; Aupuni Center, Suite 7; and
2. Kailua-Kona: DPW's Building Division Office, West Hawaii Civic Center, Bldg. E, 1st Floor, 74-5044 Anekeohokalole Highway

B. One (1) initial CD containing the the following documents may be obtained at DPW's Admin. Office in Hilo at no charge to each company/party. Additional CDs available at a charge of $25 each. CDs may be picked up in person (Aupuni Center, 101 Pauahi Street, Suite 7) or call DPW (phone number) to request a mailed CD.
1. aaaPlans and Specifications (pdf format)
2. General Requirements & Covenants, COH, DPW, July 1972 (pdf format)
3. Standard Specifications for Public Works Construction, September 1986 (pdf format)
4. Standard Details for Public Works Construction, September 1984 (available in hard copy from DPW)

C. Addenda:
   1. If and when issued, will be available on the State and County Procurement Notices website (http://www4.hawaii.gov/bidapps/showbids.cfm)
   2. Pending
      a. Pre-Bid Conference Minutes

II. PROJECT TECHNICAL REQUIREMENTS:

A. Section 01010 – SUMMARY OF WORK
   1. Paragraph 1.05.B – Examination of Premises
   2. Paragraph 1.05.C – Conditions at Site
   3. Paragraph 1.05.O - Barricade

B. Section 01050 – CONSTRUCTION PROGRESS ADMINISTRATION
   1. Paragraph 1.04.A – Submittals Schedule (required not later than 15 days after contract award)
   2. Paragraph 1.04.B – Construction Schedule (required not later than 15 days after contract award)
   3. Paragraph 1.04.C – Schedule of Values (required not later than 5 days after bid opening)
   4. Paragraph 1.04.D – Contractor's Daily Activity Reports (required with each invoice)
   5. Paragraph 1.04.E – Statements of Compliance and Certified Payrolls (required with each invoice)
   6. Paragraph 1.04.F – Invoices and Applications for Payment (required not later than 15 days after contract award)
   7. Paragraph 1.04.G – Insurance Costs/Rates (required not later than 15 days after contract award)
   8. Paragraph 1.04.H – Proof of Authorization (required not later than 15 days after contract award)

III. CRITICAL DATES:

A. Bid Advertisement: ..... March 10, 2014 ..... via State Procurement Website & Newspaper
B. Substitution Requests: ..... April 10, 2014 ..... due not later than 14 calendar days prior to Bid Opening
C. Certification for Hawai'i Product Preference: ..... April 14, 2014 ..... absolute date
D. Intent To Bid: ..... April 14, 2014 ..... due not later than 10 calendar days prior to Bid Opening
E. SQQO Form: ..... April ~~12~~ **22**, 2014 ..... due not later than 48 hours prior to Bid Opening
F. Bid Opening:..... April ~~25~~ **24**, 2014, 2:00pm ... at DPW's Hilo Admin. Office and Kona Building Division

IV. CONTRACTOR LICENSING:

A. Bidder's Licensing Requirements: Bidders must possess a valid State of Hawai'i General Contractor's License "A" or a to General Contractor's License "B" submit a bid on this project.
B. The pre-bid conference shall be the only venue in which the minimum subcontractor licensing listing requirements for the project will be formally discussed, and if necessary, modified. Failure to attend the pre-bid conference shall be evidence that the bidder/offeror has opted to not provide input on the listing. ~~and waive all future rights to protest the requirement resulting there from.~~
C. Okada Trucking Co., Ltd. v. Board of Water Supply et.al, 97 Haw. 450 (2002)
   1. "A" and "B" contractors are reminded that they are prohibited from undertaking any work, solely or as part of a larger project, which would require the general contractor to act as a specialty contractor in any area where the general contractor has no license.
   2. Although the "A" and "B" licensed contractors may act as the prime contractor, they may only perform work in the areas they have the appropriate specialty contractor classifications, either individually earned or automatically held, and the remaining work must be performed by appropriately licensed entities.
D. Specialty Contractor Classification Requirements:
   1. Special Notice to Bidders
   2. Additional "C" licensed entities may be added at the Contractor's discretion.

V. POST-BID REQUIREMENTS

A. Schedule of Values
   1. Required to be submitted by the apparent low bidder within five (5) days of bid opening
      Critical for determination of and assignment of funding from differing sources
   2. SOV General Notes
   3. SOV Line Items

B. Subcontractor Agreements
   1. Required to be submitted by the apparent low bidder within five (5) days of bid opening – critical for verification of subcontractor listing

C. Execution of Contract & Furnish Bond
   1. Within ten (10) days of notice of award

D. Proof of Certification and Compliance Submitted with Bid [SNTB]
   1. Submittal of all such proof required of apparent low bidder within five (5) days of bid opening

VI. LIQUIDATED DAMAGES [Special Provisions 8.11]

A. LD for failure to complete portions of the work with predetermined time constraints: 100%
B. LD for failure to complete the punch list: 50%
C. Determined to be $225.00 per consecutive calendar day delay [Proposal]
D. The Department is resolute in enforcing and implementing LD provisions of all its construction contracts, including this one.

VII. REQUESTS FOR INFORMATION/CLARIFICATION (RFI/RFC)

A. All RFIs/RFCs shall be submitted, in written form, to:

Attn: **Jeff Ochi, Park Projects Manager**
Subject: **Request for Information/Clarification**

PAHOA PARK MASTER PLAN PHASE I, JOB NO. PR-4234

Via one of the following methods:

Fax: (808)961-8411
Email: jochi@co.hawaii.hi.us **and CC: James Komata, Park Planner at jkomata@co.hawaii.hi.us**
Mail: 101 Pauahi Street, Suite 6, Hilo, Hawai‘i 96720

B. In the event that the Project Manager is not available, all RFIs/RFCs shall be submitted to:

Attn: **James Komata, Park Planner**
Subject: **Request for Information/Clarification**

PAHOA PARK MASTER PLAN PHASE I, JOB NO. PR-4234

Via one of the following methods:

Fax: (808)961-8411
Email: jkomata@co.hawaii.hi.us
Mail: 101 Pauahi Street, Suite 6, Hilo, Hawai‘i 96720

C. Verbal requests for information or clarification will not be entertained whatsoever.

VIII. QUESTIONS/DISCUSSION

PART FOUR –TECHNICAL BIDDING INFORMATION

I. SPECIALTY CONTRACTOR CLASSIFICATIONS:

A. Special Instructions to Bidders Regarding Specialty Contractor Classifications and Regarding Joint Contractors and Subcontractors [Special Notice To Bidders]

1. Note 1: Bidder familiarity with specialty contractor classifications
2. Note 2: Plausible alternative means and methods
3. Note 3: Self-listing of Bidder required for automatically held "C" licenses
4. Note 4: Overlapping scopes of specialty contractor classifications
5. Note 5: Use of multiple entities under a specific specialty contractor classification
6. Note 6: Listing requirements of joint contractors, subcontractors, lower-tier subcontractors and detailed division of work
7. Note 7: Bidder responsible for validity of its listed joint contractors, subcontractors and lower-tier subcontractors for duration of bid and award process

B. Form [Proposal]

II. BID PREFERENCES:

A. Hawai'i Product Preference [§103D-1002, HRS] [Special Provisions 10(A)]

1. Hawai'i Product Preference is applicable to this bid
2. Bidders intending to include in their bid products that are not on the SPO's website are directed to the section of these specifications entitled "Notice to Providers and Prospective Providers of Hawai'i Products"
3. Schedule of Hawai'i Product Preference Claims [Proposal] must be filled in accurately and completely and submitted with bid to earn the allowable preferences

B. Hawai'i Apprenticeship Preference, "aka" Act 17, SLH 2009 [§103-55.6, HRS] [Special Provision 10(B)]

1. Preference shall be in the form of a 5% bid adjustment applied to the Bidder's bid amount
2. Bidder's seeking this preference shall: [Proposal]
   a. Be a party to an apprenticeship program registered with the State DLIR at the time of its bid for each apprenticeable trade the Bidder will employ to construct this project; and
   b. Completely fill-in the Schedule of Apprenticeable Trades table attesting to the trades the Bidder will employ to perform the work of this project; and
   c. For each apprenticeable trade the Bidder will employ on this project, submit with its bid fully executed DLIR Form 1s; and
   d. Fully execute the Hawai'i Apprenticeship Preference certification.
3. Apprenticeable Trades Listing - DLIR
4. State Comptroller's Memo No. 2010-29
   a. Employer-Employee Relationship
   b. Subcontractors not required
   c. Maintenance of registration for project duration
   d. DLIR Form 2
   e. Monthly certification

III. PROJECT STATUTORY REQUIREMENTS:

A. State Wage Rates

B. HRS Chapter 103B as amended by Act 192, Session Laws of Hawaii [SLH] 2011 (eff. July 1, 2011).
   1. State Comptroller's Memo No. 2011-18
   2. Employment of State Residents on Construction Procurement Contracts; requires Hawai'i residents compose not less than 80% of the workforce employed to perform the contract work on the project. Calculated monthly by hours worked and includes the work of all subcontractors; excludes the work of employees in shortage trades, as determined by DLIR.
   3. Applicable to the Prime Contractor's contract, regardless of cost
   4. Applicable, individually and separately, to all subcontracts of $50,000 or more
   5. Monthly certification by the Contractor and applicable subcontractors (if any) required
   6. Certified Payrolls – attest to which payrollee is a Hawai'i Resident, per Act 192
   7. Statement of Compliance – Certified Payrolls: attest to verification of Hawai'i Resident status, per Act 192
   8. Certification of Compliance for Employment of State Residents, Act 192

IV. QUESTIONS/DISCUSSION

PART FIVE –DISCUSSION

I. CONTRACT DURATION:
   A. Enough time?
   B. Longer Duration?
   C. Shorter Duration?

II. LONG LEAD ITEMS:
   A. Winning bidder must inform the County of any long lead items at the beginning of the contract, especially if it will affect the contract time and completion date.

III. SUBSTITUTION REQUEST
   A. Refer to the SPECIAL PROVISIONS and the County of Hawaii General Requirements and Covenants.
   B. Any substitution request not approved by the deadline will not be entertained.

IV. QUESTIONS/DISCUSSION

V. CLOSING/ADJOURNMENT

Pahoa Park Master Plan Phase I
Job No. PR-4234
March 25, 2014 at 11:00 am
Aupuni Center
Department of Parks and Recreation Conference Room
101 Pauahi Street, Suite 6
Hilo, HI 96720
Pre-Bid Conference Attendance Sheet

Name	Organization	Address	Telephone	Fax No.	e-mail Address
Randy Yuniul	Nan Inc.	Honolulu, HI	[redacted]	[redacted]	[redacted]
Cameron Heede	Jacobsen Construction	Honolulu	[redacted]	[redacted]	[redacted]
Richard Haile	Hawaiian Dredging	201 Merchant St, Honolulu	[redacted]	[redacted]	[redacted]
CECILY LINCKI	JAS. W. GLOVER, LTD	890 LEILANI ST HILO	[redacted]	[redacted]	[redacted]
LESLIE ISEMOTO	ISEMOTO CONTR	648 PILANI ST HILO	[redacted]	[redacted]	[redacted]
JAMES KOMATH	P&R				
JEFF OKI	P&R				

SECTION 00010 - TABLE OF CONTENTS

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DIVISION 01 - GENERAL REQUIREMENTS

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DIVISION 16 - ELECTRICAL

END OF SECTION 00010

SPECIAL NOTICE TO BIDDERS

"Reminder Note": "A" general engineering contractors and "B" general building contractors are reminded that due to the Hawaii Supreme Court's January 28, 2002 decision in Okada Trucking Co., Ltd. v. Board of Water Supply, et al., 97 Haw. 450 (2002), they are prohibited from undertaking any work, solely or as part of a larger project, which would require the general contractor to act as a specialty contractor in any area where the general contractor has no license. Although the "A" and "B" contractor may still bid on and act as the "prime" contractor on a "A" or "B" project (See, HRS § 444-7 for the definitions of an "A" and "B" project.), respectively, the "A" and "B" contractor may only perform work in the areas in which they have the appropriate contractor's license (An "A" or "B" contractor obtains "C" specialty contractor's licenses either on its own, or automatically under HAR § 16-77-32.). The remaining work must be performed by appropriately licensed entities.

As stated in the Notice to Bidders, Bidders must possess a valid State of Hawai'i General Engineering Contractor's "A" license or General Building Contractor's "B" license.

Each of the following specialty contractor classifications listed in the table below have been determined by the County of Hawai'i as qualified to perform all of the work on this project based on the project's scope and the County's understanding of the State's licensing requirements and specialty contractor classifications' scopes of work. By way of the minimum licensing requirement stated for this project, no additional specialty contractor classifications are required to perform the work; however, the Bidder may list additional licensed subcontractors at its discretion.

Specialty Contractor Classification & Scope of Work [per HAR, Title 16, Chapter 77, Exhibit A, as supplemented by the State Department of Commerce and Consumer Affairs, Professional and Vocational Licensing Division, Contractor Licensing Board]		**Project Scope of Work Applicability**	
		Base Bid	**Alternate Bid Item #s**
C-1[Δ∋]	Acoustical and insulation contractor	✓	**n/a**
C-2	Mechanical insulation contractor	✓	**n/a**
C-3[Δ]	Asphalt paving and surfacing contractor	✓	**6**
C-5[∋]	Cabinet, millwork, and carpentry remodeling and repairs contractor	✓	**n/a**
C-6[∋]	Carpentry framing contractor	✓	**n/a**
C-7	Carpet laying contractor	✓	**n/a**
C-9[Δ]	Cesspool contractor	✓	**n/a**
C-10[Δ∋]	Scaffolding contractor	✓	**n/a**
C-12[∋]	Drywall contractor	✓	**n/a**
C-13	Electrical contractor	✓	**1,2,3,4,5**
C-15	Electronic system contractor	✓	**n/a**
C-17[Δ]	Excavating, grading, and trenching contractor	✓	**1,2,3,4,5, 6**
C-20	Fire protection contractor	✓	**n/a**
C-21	Flooring contractor	✓	**n/a**
C-22	Glazing and tinting contractor	✓	**n/a**
C-25[∋]	Institutional and commercial equipment contractor	✓	**n/a**
C-27	Landscaping contractor	✓	**1,2,3,4,5, 6**

C-31	Masonry contractor	✓	**5**
C-32[Δ]	Ornamental, guardrail, and fencing contractor	✓	**4**
C-33	Painting and decorating contractor	✓	**5,6**
C-36	Plastering contractor	✓	**n/a**
C-37	Plumbing contractor	✓	**5**
C-41	Reinforcing steel contractor	✓	**5**
C-42	Roofing contractor	✓	**n/a**
C-43[Δ]	Sewer, sewage disposal, drain, pipe laying contractor	✓	**5**
C-44	Sheet metal contractor	✓	**5**
C-48	Structural steel contractor	✓	**5**
C-51	Tile contractor	✓	**5**
C-56[Δ]	Welding contractor	✓	**5**

[Δ] Classification automatically held by a general engineering contractor "A" per HAR §16-77-32(a) & (d)

[ð] Reference HAR §16-77-32(b) for portions of scope authorized to a general engineering contractor "A"

[ɘ] Classification automatically held by a general building contractor "B" per HAR §16-77-32(c) & (d)

SPECIAL INSTRUCTIONS TO BIDDERS REGARDING SPECIALTY CONTRACTOR CLASSIFICATIONS AND REGARDING JOINT CONTRACTORS & SUBCONTRACTORS:

1)	**Bidder shall be intimately familiar with the scopes of work each specialty contractor classification is licensed to perform under Hawai'i Administrative Rules §16-77, the scope of work established for this project, and how the specialty contractor classifications' licenses apply in the proper execution and fulfillment of the project's scope of work.**
2)	**In the circumstance where a specialty contractor classification license listed in the above table may be deemed unnecessary by a Bidder due to its intent to employ a plausible alternative means or method, the Bidder shall in its Proposal clearly state such intent and provide a detailed plan that meets with the satisfaction of the Director. The Director reserves the sole discretion and right to determine whether the Bidder's proposed justification for not listing the required license is acceptable.**
3)	**In the circumstance where the Bidder is licensed in one or more specialty contractor classifications required of the project (whether automatically as a general engineering contractor "A", general building contractor "B", or outright) and it intends to perform all or some of the work of those classifications using its own workforce, the Bidder shall, in its Proposal, list itself accordingly and in consideration of the balance of the instructions herein provided.**
4)	**In the circumstance where a specialty contractor classification required in the above table may, in part or in whole (as applicable to the classification's scope of work), be within the licensed scope of work of another listed specialty contractor classification (e.g. overlapping scopes of licenses), the Bidder shall clearly delineate in its Proposal the extent of each subcontractor's responsibility on the project such that the Director can reasonably determine which classification is responsible for the corresponding scopes. Where a listed specialty contractor classification is rendered completely unnecessary due to overlapping scopes of work, the Bidder, in its Proposal, shall clearly state such as the reason for not listing that respective entity in its Proposal.**
5)	**In the circumstance where a Bidder intends to use more than one appropriately licensed entity in the performance of work covered under a specific specialty contractor classification, the Bidder shall clearly delineate in its Proposal the extent of each subcontractor's responsibility on the project.**
6)	**The Bidder shall ensure that, in its Proposal, it provides the name of each person or firm to be engaged by the Bidder as a joint contractor, subcontractor, or lower-tier subcontractor in the performance of the contract and the nature and scope of the work to be performed by each in sufficient detail so as the Director can fully comprehend how all aspects of the project are intended to be executed. The Director reserves the right to request supplemental information as necessary for determining Bidder's responsibility and responsiveness.**
7)	**The Bidder is solely responsible to ensure that all of its listed joint contractors' and subcontractors' licenses are current, valid & in good standing at the time of bid opening through the time the contract is fully executed, without any change in status. Bidder shall ensure that its license and those of its listed joint contractors and subcontractors are successfully renewed without expiring. Failure to do so may result in a determination of non-responsibility or non-responsiveness.**

Anyone who disagrees with the determination in the above table shall submit their written objection to the Director identifying the specialty contractor classification(s) in question and the justification(s) for such position at least 10 consecutive calendar days prior to bid opening. If no such written objections are received by the Director prior to such date, it will be presumed that all Bidders and affected parties are in agreement with the listing set forth above. No other specialty license will be required unless noted otherwise in an addendum.

The Bidder may utilize subcontractors holding specialty contractor classifications' licenses in addition to those listed above to accomplish the Project; however, should it do so, its Proposal form shall identify those classifications and the name(s) of the respective company(ies).

RESPONSIBILITY OF OFFERORS

Offeror is advised that if awarded a contract under this solicitation, Offeror shall, upon award of the contract, furnish proof of compliance with the requirements of §103D-310(c), HRS:

1. Chapter 237, tax clearance;
2. Chapter 383, unemployment insurance;
3. Chapter 386, workers' compensation;
4. Chapter 392, temporary disability insurance;
5. Chapter 393, prepaid health care; and
6. One of the following:
   a. Be registered and incorporated or organized under the laws of the State, hereinafter referred to as a "Hawaii business"; **or**
   b. Be registered to do business in the State, hereinafter referred to as a "compliant non-Hawaii business."

Refer to the Award of Contract provision (see Special Provisions) for instructions on how to comply with the above requirements.

CAMPAIGN CONTRIBUTIONS BY STATE AND COUNTY CONTRACTORS PROHIBITED, PURSUANT TO HAWAIʻI REVISED STATUTES (HRS) §11-355

If awarded a contract in response to this solicitation, offeror agrees to comply with HRS §11-355, which states that campaign contributions are prohibited from a State and County government contractor during the term of the contract if the contractor is paid with funds appropriated by the legislative body between the execution of the contract through the completion of the contract.

HAWAIʻI REVISED STATUTES, CHAPTER 103B - EMPLOYMENT OF STATE RESIDENTS ON CONSTRUCTION PROCUREMENT CONTRACTS, AS AMENDED, BY ACT 192 SLH 2011

HRS Chapter 103B, unless its application is in conflict with any federal law or will disqualify the County from receiving federal funds or aid, shall apply to this contract. It requires the Contractor and applicable subcontractor(s) to perform its contract with a workforce of which not less than eighty percent (80%) are Hawaiʻi residents. Reference Special Provisions 7.1(p) for related project specific requirements.

HAWAI'I REVISED STATUTES, SECTION 103-55.6, PREFERENCE FOR BIDDERS IN APPRENTICESHIP PROGRAMS, ACT 17, SLH 2009

The preference for bidders in apprenticeship programs [reference Special Provisions Section 7.1, Subsection (o) and Item 10, Section (B)] shall apply to this project if the estimated cost is

$250,000.00 or more, unless it is in conflict with any federal law or if it would disqualify the County from receiving federal funds or aid.

PROOF OF CERTIFICATION AND COMPLIANCE

Where, in the technical specifications for this project, requirements are prescribed that:

1. A manufacturer, fabricator, supplier, or similar entity possess a minimum documented history manufacturing, providing and/or servicing a particular product or system that will be utilized on this project; and/or

2. The contractor, subcontractor, installer, or similar entity possess a minimum level of documented successful experience (e.g., number of years, number of projects, etc.) or proficiency specializing in the installation of a particular item of work; and/or

3. The contractor, subcontractor, installer, or similar entity hold a manufacturer's certification or approval to install its product or system; and/or

4. Mandates some other form of measurable criteria to ensure a minimum level of quality and success in accomplishing the work of this project;

All Bidders ensure that the entities it employs or contracts with for applicable scopes of work comply with the necessary requirements and it shall be ready to submit requisite proofs of compliance that is sufficient for the Director to reasonably determine the responsiveness and responsibility of the Bidder's overall offer. The apparent low bidder shall submit all necessary documentation in satisfaction thereof to the Director within five (5) consecutive calendar days of the bid opening. Failure to provide adequate documentation to the Director's satisfaction may result in a determination that the Bidder is nonresponsive and/or non-responsible.

Revised: 3/6/2014

LISTING OF RESPONSIBLE ENTITIES

In compliance with the provisions of Chapter 103D-302, HRS, and Chapter 3-122-21, Subchapter 5, Hawai'i Administrative Rules, the Bidder shall record hereinafter the names of each person or firm to be engaged by the Bidder as a joint contractor or subcontractor in the performance of the public work construction contract.

In order for the County to ensure the Bidder's compliance with the Hawai'i Supreme Court's January 28, 2002 decision in *Okada Trucking Co., Ltd. V. Board of Water Supply, et. al.*, 97 Haw. 450 (2002), the Bidder shall record hereinafter the names of each joint contractor, subcontractor, lower tier subcontractor or other entity that it intends to perform work on this Project.

In order for the County to determine the Bidder's responsiveness and responsibility, the Bidder shall provide the corresponding contractor license identification number issued by the State and describe the nature and scope of the work to be performed by each entity listed. Where work is to be performed by the Prime Contractor (Bidder) it shall list itself accordingly as the responsible entity.

Bids that do not comply with the requirements may be rejected at Director's discretion. Reference the Special Notice to Bidders for additional instructions and guidance.

The classifications listed below are provided for the convenience of the bidder only, bidders are required to verify the minimum licensing required in the Special Notice to Bidders as may be amended.

Name of Responsible Entity: (i.e., Prime-, Joint- or Sub- Contractor, etc.)	**License I.D.**	**Nature and Scope of Work**
C-1		Acoustical and Insulation
C-2		Mechanical Insulation
C-3		Asphalt Paving and Surfacing
C-5		Cabinet, Millwork, and Carpentry Remodeling and Repairs
C-6		Carpentry Framing
C-7		Carpet Laying
C-9		Cesspool
C-10		Scaffolding
C-12		Drywall
C-13		Electrical
C-15		Electronic Systems
C-17		Excavating, Grading, and Trenching

C-20		Fire Protection
C-21		Flooring
C-22		Glazing and Tinting
C-25		Institutional and Commercial Equipment
C-27		Landscaping
C-31		Masonry
C-32		Ornamental, Guardrail, and Fencing
C-33		Painting and Decorating
C-36		Plastering
C-37		Plumbing
C-41		Reinforcing Steel
C-42		Roofing
C-43		Sewer, Sewage Disposal, Drain, Pipe Laying
C-44		Sheet Metal
C-48		Structural Steel
C-51		Tile
C-56		Welding

(Attach additional sheets as necessary)
revised: 3/4/2014

SECTION 02200 – EARTHWORK

PART 1 – GENERAL

1.01 GENERAL CONDITIONS

A. As specified in Section 00700.

1.02 GENERAL REQUIREMENTS

A. Furnish materials, labor and equipment required to accomplish all excavation, filling and grading as indicated on the drawings.

1.03 STANDARD SPECIFICATIONS AND SOILS REPORT

A. The report "Geotechnical Investigation Report, Pahoa Park (expansion) Master Plan-Phase I, Kuuhome Street, Pahoa, Hawaii" dated September 25th , 2013 prepared by Construction Engineering Labs, Inc. shall be a part of this specifications. A copy of the report is attached to this section. If there is any conflict between the project soils report and the Standard Specifications, Contractor shall follow all recommendation as provided in the project soils report.

B. Work shall be in accordance with the following sections of the County's "Standard Specifications for Public Works Construction" (SSPWC), dated September 1986 as revised, except as amended in the plans and specifications herewith. (Paragraphs concerning Measurement and Payment in the Sections are not applicable to this project.)

1. Clearing and Grubbing	Section 10
2. Trench Excavation and Backfill	Section 11
3. Roadway Excavation	Section 12
4. Structural Excavation and Backfill	Section 13
5. Rock for Fill	Section 14
6. Crushed Rock	Section 15
7. Borrow	Section 16
8. Embankment	Section 17

PART 2 – PRODUCTS

2.01 MATERIALS

A. Asbestos Prohibition: No asbestos containing materials or equipment shall be used under this section. The Contractor shall ensure that all materials and equipment incorporated in the project are asbestos-free.

B. General Fill Materials: Shall be well-graded soil or soil/rock mixture free from organic material and backfill, debris, other deleterious substances and shall not contain particles larger than 18 inches in maximum size.

C. Cushion Fill: Under exterior and interior concrete slabs-on-grade shall be ASTM C33 Standard Size Aggregate Nos. 5, 6, 57 and 67.

D. Drain Rock: Shall meet the gradation requirements for ASTM C33 Standard Size Nos. 57 and 67.

E. Insufficient Earth Material: The Contractor shall import all necessary material to complete the grading work at no additional cost to the Owner. Such imported material shall be subject to the approval of the Director and shall meet the requirements as specified for each category of the materials.

F. Structural Fill Materials: Structural fill shall be well graded granular material, with particles 6 inches or less in maximum size and contain less than 20 percent particles passing the No. 200 sieve by weight. When placed in confined areas, such as utility trenches and footing excavations the maximum particle size shall be limited to 2 inches.

PART 3 – EXECUTION

3.01 PROTECTIVE MEASURES

A. All excavation shall be protected and guarded against danger to life, limb and property in accordance with applicable regulations.

B. Shoring, as required to safely preserve the excavations, existing electrical hand-hole boxes, earth banks, etc. free from damages resulting from the work, shall be provided and installed by the Contractor.

C. All excavations shall be kept free from standing water. The Contractor shall do all pumping and draining that may be necessary to remove water to the extent required in carrying on work. Grading shall be controlled so that the ground surface is properly sloped to prevent water run-off from entering open trenching excavations.

D. The Contractor shall conduct operations with minimum interference to park facilities, streets, driveways, sidewalks, passageways, traffic, etc.

E. The Contractor shall confine all work, equipment, materials and personnel as much as possible to the work area as indicated. The Contractor shall schedule all work that involves excessive noise, dust, dirt, or any other detrimental aspect of this work in order that there will be minimum disruptions to neighbors.

F. When necessary and when directed, the Contractor shall provide and erect barriers, etc. with special attention to the protection of personnel.

3.02 LAYING OUT

A. The laying out of baselines, establishment of grades and staking out the entire work shall be done by a Land Surveyor, licensed in the State of Hawaii, at the expense of the Contractor and he shall be solely responsible for their accuracy. The Contractor shall erect and maintain substantial batter boards showing construction lines and levels.

B. Should any discrepancies be discovered in the dimensions given in the plans, the Contractor shall immediately notify the Director before proceeding any further with the work; otherwise, he will be held responsible for any costs involved in corrections of construction placed due to such discrepancies.

3.03 SITE GRADING

A. All grading work shall be performed in conformance with County of Hawaii Ordinance 168, the applicable provisions of Chapter 54, Water Quality Control Standards, and Chapter 55, Water Pollution Control, of Title 11, Administrative Rules of the State Department of Health. In addition, the work shall be in conformance with the Air Pollution Control Standards and Regulations of the State Department of Health.

B. The area to be graded shall be cleared of vegetation, debris, rubbish, old pavements, abandoned pipelines and other deleterious materials. Trees and large masses of roots shall be grubbed. All of these materials shall be removed and disposed of properly off-site at no cost to the Owner.

C. No blasting will be permitted.

D. The areas not covered by concrete slab or pavement up to the Contract Zone Limits shall be graded to conform to finish contours with allowance for depth of top soil. Rough grading shall prevent the drainage of water into construction areas.

3.04 SITE PREPARATION

A. Prior to commencement of earthwork operations, all vegetation debris and other deleterious materials shall be removed from the site.

B. Building area, all CUT areas within the structural footprints shall be over excavated a minimum of two feet below the proposed footing bearing grade and to a minimum of ten (10) feet in a horizontal direction beyond the perimeter of the proposed structures. These areas should be ripped an additional 2 feet (4 feet below the proposed footing bearing grade. Ripped material shall not exceed 6” in diameter. All Fill areas should be ripped to a minimum depth of two feet and a minimum distance of 5 feet horizontally beyond the perimeter of the toe of the proposed slopes. The ripped material should be re-compacted to at least 95% relative density. The fill areas for the building pad should then be brought back to the proposed

grades using 3- inch minus structural compacted to at least 95% relative density. The building pad may be capped with a final 6inch lift of 1-inch minus material.

C. Any underground structures such as cesspools, cisterns, septic tanks, well, pipelines, fuel tanks, etc. discovered in the site preparation work shall be removed and backfilled in accordance with these specifications and any applicable regulations.

D. All unsupported permanent cut slopes shall be constructed to an inclination of no greater than 1 horizontal to 1 vertical and a maximum height of 15 feet. Cut slopes that exceed the 15 feet in height shall have a 8 foot wide bench installed at mid-height of the slope.

3.05 PROBING AND GROUTING

A. The Special Inspector shall be present to observe grouting procedures on a full-time basis. All cost for their services shall be borne by the Contractor.

B. Probe holes shall have a diameter of at least 2 inches.

C. Depth of probing below the bottom of footings shall be 10 feet. The Special Inspector shall field verify the depth of each probe hole before any grout is placed.

D. One probe hole shall be made at each spread footing location. Probe holes shall not be spaced more than 10 feet on center along the length of continuous footings and 10 by 10 foot grids beneath structural slabs on grade. If cavities and/or voids are encountered or suspected during the probing operation, additional probes shall be drilled at closer spacing to aid in delineating the vertical and lateral extent of the cavity and/or void. The Special Inspector shall approve of any additional probe holes before they are drilled. Any loose areas on cavities disclosed during clearing and grubbing operations shall be excavated to expose firm materials and back filled with compacted structural fill.

E. Probe holes should be grouted with cement grout having a compressive strength of at least 1,500 pounds per square inch. A grout pipe shall be utilized and fully inserted to the bottom of the probe hole prior to pumping any grout. A maximum of 1 cubic yard of grout shall be pumped into a probe hole at any time. After that volume has been pumped, the grout shall be allowed to set, and then grouting in the same zone shall be attempted again. Grouting should continue 1 cubic yard at a time. The Special Inspector shall monitor the quantity of grout being placed.

F. In areas excessive grout take, it may be preferable to excavate the roof of the cavity and fill it with structural backfill, concrete, or some combination. Specific recommendations shall be obtained from the Contracting Officer for a particular situation encountered during construction.

G. All costs for probing and grouting shall be borne by the Contractor up to 5 cubic yards of grout material. Grouting costs beyond this in cubic yards shall be considered a Change Order.

H. Probing and grouting shall be performed under the observation of the Special Inspector.

I. The probe drill shall be available on-site until the probing and grouting operations are completed. A longer lag time between probing/grouting operations and foundation construction may be required in the construction schedule.

3.05 FILLING AND BACKFILLING

A. Below Building

1. Soils shall be excavated to two feet below bottom of foundation and to a minimum distance of 5 feet horizontally beyond the perimeter of the toe of and proposed slope. Material beneath the building shall be ripped/ crushed to a diameter smaller than 6".

2. Grade shall be raised to bottom of foundation with 6- minus minus select borrow subbase compacted to 95% maximum dry density. A final 6 inch lift of 1- inch minus material may be used to cap off the building pad.

B. General fill slopes shall not be steeper than 2 horizontal to 1 vertical.

3.06 UTILITY TRENCH DIGGING AND BACKFILL FOR EXTERIOR ELECTRICAL WORK

A. Trench excavation for exterior electrical work shall be dug to depths shown on the drawings. If depths are not indicated, the trench shall be cut down to proper levels that will provide the minimum coverage to the ducts and required by the Code.

B. Trenching work shall be open cut excavation with banks as nearly vertical sufficient width to provide proper working space and bottom of trench accurately graded to provide uniform slope and support.

C. Backfill shall be General Fill and Backfill and compacted to 95% of maximum dry density as determined by ASTM D1557. Slightly mound the backfill above the finished grade to allow for settlement. See ELECTRICAL Section for duct-work requirements.

3.07 FILL TESTING

All fill shall be tested by geotechnical engineer or a designated testing agency for approval. All cost of testing shall be borne by the Contractor. Testing shall be made throughout the area for each compacted lift. All test results must be approved before the Contractor can proceed with placing of topsoil, cushion fill or base course. Should any testing fail, additional testing will be required at no cost to the County, at an enhanced frequency to be determined by the Director.

3.08 FINISH GRADING

Where finish grades and contours are not given, Contractor shall grade to provide drainage away from new and existing structures and shall provide good transitions into existing grades outside the grading limits.

END OF SECTION

SECTION 02577 – PAVEMENT MARKINGS

PART 1 – GENERAL

1.01 GENERAL REQUIREMENTS

The work to be performed under this section shall include the furnishing of all labor and equipment necessary to perform all pavement markings as indicated on the drawings.

1.02 SUBMITTALS

A. Product Data: Manufacturer's product data and application instructions.

B. Manufacturing Control and ISO Certification: For Preformed Pavement markings, manufacturer must be ISO 9001:2008 certified and provide proof of current certification.

1.03 DELIVERY AND STORAGE

Deliver paints and paint materials in original sealed containers that plainly show the designated name, specification number, batch number, color, date of manufacture, manufacturer's directions, and name of manufacturer.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Asbestos Prohibition: No asbestos containing materials or equipment shall be used under this section. The Contractor shall insure that all materials and equipment incorporated in the project are asbestos-free.

B. Paint: Non-reflective conforming to Fed. Spec. TT-P-102, color as indicated on the drawings or as selected by the Contracting Officer.

2.02 EQUIPMENT

A. Painting Equipment: The mechanical marker shall be an atomizing spray-type marking machine suitable for application of traffic paint. It shall produce an even and uniform film thickness at the required coverage and shall be designed so as to apply markings of uniform cross-sections and clear-cut edges without running or spattering and within the limits for straightness set forth herein.

Use wheeled, motor-propelled applicator machine to apply traffic paint at nominal thickness of 0.015 inch or at rate of 300 linear feet of single 4-inch stripe for 1 gallon 150 paint. Use applicator having appropriate shields around nozzles to permit sharp stripe definition, and separate nozzle to direct air stream immediately ahead of paint application for clearing debris, dust, and other foreign matter. Immediately remove misted, dripped, and spattered paint from pavements.

PART 3 – EXECUTION

3.01 INSPECTION

Examine the areas and conditions under which pavement markings are to be installed. Should any condition be found unsuitable, no work shall be done until the unsatisfactory conditions have been corrected and are acceptable to the Contractor. Proceeding with the work will imply acceptance of the conditions by the Contractor.

3.02 SURFACE PREPARATION

Allow new pavement surfaces to cure for a period of not less than 30 days before application of marking materials. Thoroughly clean surfaces to be marked before application of the paint. Remove dust, dirt, and other granular surface deposits by sweeping, blowing with compressed air, rinsing with water, or a combination of these methods as required. Remove rubber deposits, existing paint markings, and other coatings adhering to the pavement by water-blasting. Scrub affected areas, where oil or grease is present on old pavements to be marked, with several applications of tri-sodium phosphate solution or other approved detergent or degreaser and rinse thoroughly after each application. After cleaning oil-soaked areas, seal with shellac or primer recommended by the manufacturer to prevent bleeding through the new paint.

3.03 PAINTING INSTALLATION

A. Approval of Layout: Do not apply paint until the layouts, indicated alignment, and the condition of the existing surface has been approved by the Contracting Officer.

B. Painting: Provide guidelines and templates as necessary to control paint application. Take special precautions in marking symbols. Sharply outline all edges of markings. The maximum drying time requirements of the paint specifications will be strictly enforced, to prevent undue softening of bitumen, and pickup, displacement, or discoloration by tires of traffic. Striping widths for lines shall be 4 inches, unless otherwise indicated.

C. Finish: The finished product shall have an opaque, well-painted appearance, with no black or other discoloration showing though.

3.04 TRAFFIC CONTROL AND PROTECTION

Place warning signs near the beginning of the work site and well ahead of the work site for alerting traffic. Place small markers along newly painted lines to control traffic and prevent damage to newly painted surfaces.

END OF SECTION

SECTION 02740 - SEPTIC SYSTEMS

PART 1 – GENERAL

1.01 GENERAL CONDITIONS

As specified in Section 00700.

1.02 GENERAL REQUIREMENTS

A. Whenever the Contractor is required by State or local laws or regulations to make a deposit and/or to pay for a permit before proceeding with any work called for under this part of the specifications. The Contractor shall make the necessary deposit and/or pay for obtaining the required permit for the work.

B. In addition, the following construction standards, with certain modifications as hereinafter specified, are hereby incorporated into and made a part of these specifications by reference and shall be applicable to all work performed by the Contractor under this section.

1. Specific Sections of the Counties' STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION dated September 1986 and STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION dated September 1984 as revised, except as amended in the plans and/or specifications herewith. Paragraphs concerning Measurements and Payments in the Sections are not applicable to this project.
2. Specific Sections of the INTERNATIONAL PRIVATE SEWAGE DISPOSAL CODE as adopted by the County of Hawaii.
3. Specific Sections of the State of Hawaii, Department of Health, Hawaii Administrative Rules Chapter 11-62, Wastewater Systems.

1.03 CERTIFICATION

The Contractor shall furnish to the Engineer, affidavits from the manufacturers of pipe, septic tank, fittings, etc., furnished and installed under this section verifying that such materials delivered to the project conform to the requirements of this specification.

PART 2- PRODUCTS

2.01 MATERIALS

A. Asbestos Prohibition: No asbestos containing materials shall be used under this section. The Contractor shall insure that all materials incorporated in the project are asbestos-free.

B. Materials for septic system shall be in accordance with the below listed sections of the Counties' STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION dated September 1986 and STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION dated September 1984 as revised, except as amended in the plans

and/or specifications herewith. Paragraphs concerning Measurements and Payments in the sections are not applicable to this project.

1. PVC Sewer Pipe and Appurtenances (SDR-35 or Approved Equal) Section 21

C. Septic Tank shall be H-20 Traffic rated, 1250-gallon concrete or ferro-cement septic tank lined with approved water proofing coating specifically formulated for wastewater applications, high performance polyurea or polyurethane coating. Waterproof coating may be factory applied or field applied by a manufacturer certified applicator. Each septic tank shall have two 24" minimum diameter access holes. All inlet and outlet pipe shall be watertight sealed with gaskets and/or sealants to the septic tank. Septic tank shall be 1250-gallon septic tank as manufactured by Pacific Gunite or pre-approved equivalent.

D. Soil replacement shall be 3/8" minus cinder or 3/8" minus cinder soil.

E. Drain rock shall be 3/4" - 1/2" rinsed clean with no fine dust.

F. The soil absorption bed shall be construction with Standard Infiltrator Chambers as manufactured by Infiltrator System Inc. or pre-approved equivalent.

G. Distribution Boxes shall be rated as specified per plans

PART 3 – EXECUTION

3.01 INSTALLATION

A. Location and Adjustment of Existing Utility Lines: The Contractor shall be responsible for precisely laying out the septic system shown on the contract drawings as provided elsewhere in these specifications. The locations shown on the contract drawings of the various utility lines which the new lines are to cross over or under or connect to, be determined on the basis of the best information available; however, no assurance can be provided that the actual locations will be precisely as shown on the contract drawings.

1. In performing all work, the Contractor shall exercise due care and caution necessary to avoid any damage to and impairment in the use of any existing utility line. Any damage inflicted on existing lines resulting from the Contractor's operations shall be immediately repaired and restored as directed by the Engineer at the Contractor's expense.
2. Trench excavation and backfill for the laying and installation of sewer pipes and leaching field, to the required line and grade and structure excavation for

B. The construction of the appurtenant utility structure shall be governed by the following sections of the DPW STANDARD SPECIFICATIONS as herein before amended with respect to Measurements and Payments and with certain additional modifications noted below:

1. Trench Excavation and Backfill Section 11
2. Structure Excavation and Backfill Section 13

3. Sewer Manhole – Frame and Cover Section 23
4. Restoring Pavements and Other Improvements Section 38

C. Surplus material resulting from trench and structure excavation shall be used by the Contractor for backfilling, filling and grading to the extent required as specified elsewhere in these specifications. The Contractor, in performing any work within the Contract Zone Limits shown on the contract drawings, shall exercise due care to keep to an absolute minimum any damages to existing improvements, including plants and shrubs. The Contractor shall be responsible for repairing, replacing and/or restoring all damages to existing improvements to the satisfaction of the Engineer.

D. Contractor shall coordinate percolation test for each field with the Owner before the entire beds are excavated. Tests shall be paid for by the Owner.

E. Absorption Bed Construction: The trench shall be constructed to the line and grade shown on the plans or as directed by the Engineer. Extreme care shall be exercised in placing the 3/8" cinder soil replacement drain rock, laying the pipe, and backfilling, so that there will be no mixing of the excavated material with the filter material.

F. The Contractor shall schedule a bed test of the absorption bed after the excavation is complete and before any installation of the soil replacement. No work shall be done on the absorption bed until written authorization to proceed from the design engineer is received.

1. The Contractor shall supply the necessary equipment such as hoses and water for the test. The test will require a minimum of two thousand gallons of potable water or 2 times the capacity of the septic tank, whichever is greater.
2. A preliminary inspection shall be required for the system prior to any backfilling.

G. Final Inspection: At the time of final inspection of the work performed under the contract, the septic system covered by this section shall be complete in every respect and operating as designed. All surplus material of every character resulting from the work of this section shall have been removed. The septic system shall be free from sand, silt or other obstructions. There shall be no low points over the absorption bed for ponding of any rainfall runoff. Any defect discovered in the utilities subsequent to this inspection shall be corrected prior to final acceptance.

END OF SECTION

SECTION 02821 – CHAIN LINK FENCES AND GATES

PART 1 - GENERAL

1.01 GENERAL CONDITIONS

As specified in Section 00700.

1.02 GENERAL REQUIREMENTS

Furnish materials, labor, and equipment necessary to install all chain link fences and gates to the limits shown and as detailed on the plan and as specified herein. All materials shall be new, specifically purchased for this project.

1.03 SUMMARY

A. Section Includes:

1. Fence framework, fabric, and accessories.
2. Excavation for post bases.
3. Concrete foundation for posts and center drop for gates.
4. Manual gates and related hardware.
5. Gate locking devices.

B. Related Sections:

1. Division 3: Concrete: Concrete foundation and grout.
2. Division 5: Metal flanges and anchor bolts.

1.04 DEFINITIONS

A. Terminology shall be as defined in CLFMI-Product Manual.

B. Additional terminology shall be as defined in ASTM F552.

1.05 SYSTEM DESCRIPTIONS

A. Fence Height: 8 feet nominal, unless indicated otherwise on drawings.

B. Line Post Spacing: As indicated on drawings, at intervals maximum 10 feet.

C. Fence Post and Rail Strength: Conform to ASTM F1043 "Heavy Industrial Fence" quality.

D. Barbed wire on extension arms.

E. Manual gates.

1.06 SUBMITTALS

A. Shop Drawings: Indicate plan layout, spacing of components, post foundation dimensions, and schedule of components.

B. Product Data: Submit data on fabric, posts, accessories, and fittings.

C. Samples: Submit samples of fence fabric illustrating construction and colored finish.

D. Manufacturer's Installation Instructions: Submit installation requirements.

1.07 CLOSEOUT SUBMITTALS

Project Record Documents: Accurately record actual locations of property perimeter posts relative to property lines or easements.

1.08 QUALITY ASSURANCE

A. Supply material in accordance with CLFMI -Product Manual.

B. Perform installation in accordance with ASTM F567.

C. Maintain one copy of each document on site.

1.09 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three 3 years experience.

B. Installer: Company specializing in performing work of this section with minimum three (3) years experience.

1.10 DELIVERY STORAGE AND HANDLING

A. Deliver, store, protect and handle products with adequate protection against damage.

B. Deliver fence fabric and accessories in packed cartons or firmly tied rolls.

C. Identify each package with manufacturer's name.

D. Store fence fabric and accessories in secure and dry place.

1.11 COORDINATION

Coordinate work with work of others.

1.12 WARRANTY

Provide warranty for minimum two (2) years for chain link fence installation. Include coverage for PVC coating against delaminating, cracking, crazing, blistering, peeling, chalking or fading.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Anchor Fence Inc.

B. Cyclone Inc.

C. Merchants Metals Division of MMI Products, Inc., or approved equal.

2.02 MATERIALS

A. Chain Link Fence Fabric shall be 2-inch mesh, 9ga core, 8ga finish PVC fuse bonded, galvanized and conform to ASTM A392, Class 1. The hot-dipped galvanized fabric shall contain not less than 1.2 ounces per sq. ft. of uncoated wire surface as determined by stripping test ASTM A90 and under the PREECE Test (ASTM A239), shall withstand 6 or more 1-minute dips before reaching the end point. All fabric shall be free from barbs, icicles, or other hazardous projections resulting from galvanizing. PVC color shall be green.

B. Tie Wire shall be 9 gauge (9 gauge for gates) soft aluminum wire as called for on plans.

C. Tension Bar shall be 1/4” thick by 3/4” wide galvanized mild steel bar for attachment of fabric to terminal posts.

D. Brace Band shall be formed from galvanized steel bands at least 1/8” thick by 3/4” wide.

E. Tension Band shall be formed from galvanized steel bands at least 12 gauge thick by 3/4” wide.

F. Tension Rod shall be a 3/8” dia. mild steel galvanized rod threaded at one end and hooked 180 degrees at the other.

G. Fittings:

1. Post Cap and Eye Top shall be of one-piece hot-dip galvanized cast iron construction and shall attach securely onto their respective posts.

2. Coupling for top rails shall be outside sleeve type, galvanized, at least 6 inches long and crimped at center.

3. Rail Ends shall be snug, one-piece fittings for top and brace rails with holes to receive 5/16” bolts for securing to rail end bands.

4. Double Rail End shall be similar to rail end except for an additional ½" hole to receive the hooked end of a tension rod.

H. Composition and Finish of Metal Parts: All metal parts and fittings, including tracks, gate hardware and frames, shall be of steel, malleable iron or wrought iron, and shall be galvanized by the hot-dip process, after fabrication, in conformance with ASTM A153. The coating on all parts shall be continuous and smooth; that is, free from barbs, icicles, or other projections. Bolts may be cadmium-plated in conformance with ASTM A165 instead.

I. Posts, Rails, and Braces shall be of standard weight, hot-dipped galvanized, welded and seamless steel pipes conforming to ASTM A120. Size, length, and painted as shown on the drawings, or when not indicated there on, as specified in section 54, Chain-link Fence, in the Standard Specifications for PW Construction.

J. Tension Wire shall be of 7-gauge coiled spring galvanized wire.

2.03 COMPONENTS

A. Line Posts: Per C&C of Honolulu Department of Parks and Recreation standard details

B. Corner and Terminal Posts: Per C&C of Honolulu Department of Parks and Recreation standard details

C. Top, Intermediate and Bottom Rail: Per C&C of Honolulu Department of Parks and Recreation standard details

D. Tension Wire: Per C&C of Honolulu Department of Parks and Recreation standard details

E. Stretcher Bar: Per C&C of Honolulu Department of Parks and Recreation standard details

F. Truss Rod with Turnbuckle: Per C&C of Honolulu Department of Parks and Recreation standard details

G. Tie Wire: Per C&C of Honolulu Department of Parks and Recreation standard details

2.04 ACCESSORIES

A. Caps: Ball type, cast steel galvanized, or malleable iron galvanized, size to post diameter, set screw retainer.

B. Extension Arms: Galvanized pressed steel, PVC coated, to accommodate 3 strands of barbed wire, single arm, sloped 45 degrees.

C. Fittings: Sleeves, bands, clips, rail ends, tension bars, fasteners and fittings; galvanized steel.

D. Gate Hardware: Center gate stop and drop rod, gate hinges for each leaf and hardware for padlock.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive work.

B. Beginning of work means installer accepts existing surface and substrate conditions.

3.02 INSTALLATION AND WORKMANSHIP

A. General:

1. Install framework, fabric, accessories and gates in accordance with ASTM F567 and as noted on drawings.

2. Metal fencing and gates of the various types called for shall be erected in strict conformance with the plans and these specifications. The gates and hardware shall provide intended freedom of operation. Posts shall be plumb and in-line. Welding shall be done in accordance with latest AWS standards. However, no splicing of posts, rails, or braces shall be accepted. Where changes in-line occur with an angle of deflection of 30 degrees or more, the change point will be considered a corner and a corner post shall be installed thereat. End, corner, and gate posts for fences with 5-foot and wider fabric shall be braced to the nearest line post with horizontal braces and tension rods. The horizontal braces shall be spaced midway between top rail and ground and securely fastened to posts as shown on plans. Where fencing is placed along a curve with radius of 50 feet or less, horizontal braces (and tension rods) shall be installed between all posts in like manner. Pull posts, at maximum intervals of 100 feet, shall be braced and trussed in both directions as specified above.

3. Field Touch-Ups: Field welds shall be cleaned of flux and spatter and all damaged galvanizing removed, all hazardous projections ground off, properly prepared, and then heavily coated with self-curing inorganic zinc coating. Manufactured coatings shall be applied in strict accordance with manufacturer's printed specifications. Damage to existing painted surfaces shall be touched up.

B. Post and Rail Installation:

1. Fence posts, except as otherwise indicated or specified per the Architectural drawings, shall be spaced not more than 10 feet apart. In curved fence sections having a radius of 50 feet or less, the posts shall be placed as shown on the plans. Line posts shall be set so that top of the eye tops shall be at the same height as the fence fabric. Post caps shall be secured in place either by spot welding, S.S. tamper proof set screw, or S.S. setting pin.

2. Allow concrete to cure for minimum seven (7) days before installing fabric and other materials attached to posts.

3. Install posts with 6 inches maximum clear opening from end posts to buildings, fences and other structures, unless indicated otherwise.

4. Set intermediate and terminal posts plumb in concrete footings or concrete walls, as shown on drawings.

5. Line Post Footing Depth Below Finish Grade: Follow ASTM F567, unless indicated otherwise.
6. Corner and Terminal Post Footing Depth Below Finish Grade: Follow ASTM F567, unless indicated otherwise.

7. Top rails shall pass through and bear firmly on base of eye tops, form a continuous brace from end to end of each stretch of fence, and be securely fastened to terminal posts with rail ends and brace bands. Coupling for the top rails shall be installed at intervals of 24 feet maximum.

8. Install center and bottom brace rail on corner gate leaves.

9. Brace each gate and corner post to adjacent line post with horizontal center brace rail and diagonal truss rods. Install brace rail one bay from end and gate posts.

10. Install top rail through line post tops and splice with 6 inch long rail sleeves.

11. Install bottom rail through line post and splice with 6 inch long rail sleeves.

C. Chain-Link Fabric Installation:

1. Chain link fabric shall be fastened on the side of the posts as designated, and shall be mounted on the posts so that the bottom of the fabric will be no more above the finished grade than called for on the plans. High points of the ground shall be excavated as necessary. The fabric shall be stretched taut and securely fastened to the posts. Ends of wire ties shall be bent back so as not to be a hazard. Between posts the top edge of the fabric shall be fastened to the top rail and the lower edge to the tension wire with tie wire of size and at spacing as called for on the plans. Tension wire shall be stretched tight and shall be installed in a straight line between posts. Tension bars extending the full height of the fence, and tension bar bands shall be used for fastening fabric to end, corner, pull, and gate posts. Bolted tension bar bands shall be placed at top and bottom of tension bars and spaced at 14-inch intervals max. Fastenings to line posts shall be made with tie wire of size and spacing as called for on the plans.

2. Do not stretch fabric until grout for sleeves has cured 14 days.

3. Stretch fabric between terminal posts or at intervals of 100 feet maximum, whichever is less.

4. Fasten fabric to top, intermediate and bottom rails, line posts, truss rods, stretcher bars and with tie wire at maximum 15 inches on centers, unless shown otherwise.

5. Attach fabric to end and corner posts with stretcher bars and stretcher bar clips.

3.03 ERECTION TOLERANCES

A. Maximum Variation From Plumb: *1/4* inch.

B. Maximum Offset From Indicated Position: 1 inch.

C. Minimum distance from property line: 6 inches.

3.04 ADJUSTING

Adjust gates for smooth and balanced operation.

3.05 FINAL CLEAN-UP

All exposed metal surfaces shall be clean and free of cement. All surplus earth resulting from metal fencing work that is not used in the grading work shall be cleaned up and disposed of at location specified on plans. All debris resulting from work of this section shall be removed from the site.

END OF SECTION

SECTION 05500 - METAL FABRICATIONS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Steel framing and supports for overhead doors.
2. Steel framing and supports for countertops.
3. Steel framing and supports for mechanical and electrical equipment.
4. Steel framing and supports for applications where framing and supports are not specified in other Sections.
5. Shelf angles.
6. Metal ladders.
7. Structural-steel door frames.
8. Loose bearing and leveling plates for applications where they are not specified in other Sections.

B. Products furnished, but not installed, under this Section include the following:

1. Loose steel lintels.
2. Anchor bolts, steel pipe sleeves, slotted-channel inserts, and wedge-type inserts indicated to be cast into concrete or built into unit masonry.
3. Steel weld plates and angles for casting into concrete for applications where they are not specified in other Sections.

1.02 COORDINATION

A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and topcoats are compatible with one another.

B. Coordinate installation of metal fabrications that are anchored to or that receive other work. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

1.03 ACTION SUBMITTALS

A. Product Data: For the following:

1. Paint products.
2. Grout.

B. Shop Drawings: Show fabrication and installation details. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items. Provide Shop Drawings for the following:

1. Steel framing and supports for overhead doors.
2. Steel framing and supports for countertops.

3. Steel framing and supports for mechanical and electrical equipment.
4. Steel framing and supports for applications where framing and supports are not specified in other Sections.
5. Shelf angles.
6. Metal ladders.
7. Structural-steel door frames.
8. Loose steel lintels.

C. Delegated-Design Submittal: For ladders, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.04 INFORMATIONAL SUBMITTALS

A. Qualification Data: For professional engineer.

B. Mill Certificates: Signed by stainless-steel manufacturers, certifying that products furnished comply with requirements.

C. Welding certificates.

D. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers, certifying that shop primers are compatible with topcoats.

E. Research/Evaluation Reports: For post-installed anchors, from ICC-ES.

1.05 QUALITY ASSURANCE

A. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

B. Welding Qualifications: Qualify procedures and personnel according to the following:

1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
2. AWS D1.6/D1.6M, "Structural Welding Code - Stainless Steel."

1.06 FIELD CONDITIONS

A. Field Measurements: Verify actual locations of walls and other construction contiguous with metal fabrications by field measurements before fabrication.

PART 2 - PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer to design ladders.

B. Structural Performance of Aluminum Ladders: Aluminum ladders shall withstand the effects of loads and stresses within limits and under conditions specified in ANSI A14.3.

C. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes acting on exterior metal fabrications by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects.

1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

2.02 METALS

A. Metal Surfaces, General: Provide materials with smooth, flat surfaces unless otherwise indicated. For metal fabrications exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.

B. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.

C. Stainless-Steel Sheet, Strip, and Plate: ASTM A 240/A 240M or ASTM A 666, Type 304.

D. Stainless-Steel Bars and Shapes: ASTM A 276, Type 304.

E. Rolled-Stainless-Steel Floor Plate: ASTM A 793.

F. Steel Tubing: ASTM A 500/A 500M, cold-formed steel tubing.

G. Slotted Channel Framing: Cold-formed metal box channels (struts) complying with MFMA-4.

1. Size of Channels: 1-5/8 by 1-5/8 inches.
2. Material: Galvanized steel, ASTM A 653/A 653M, structural steel, Grade 33, with G90 coating; 0.079-inch nominal thickness.

H. Aluminum Plate and Sheet: ASTM B 209, Alloy 6061-T6.

I. Aluminum Extrusions: ASTM B 221, Alloy 6063-T6.

2.03 FASTENERS

A. General: Unless otherwise indicated, provide Type 304 stainless-steel fasteners.

B. Stainless-Steel Bolts and Nuts: Regular hexagon-head annealed stainless-steel bolts, ASTM F 593; with hex nuts, ASTM F 594; and, where indicated, flat washers; Alloy Group 1.

C. Anchor Bolts: ASTM F 1554, Grade 36, of dimensions indicated; with nuts, ASTM A 563; and, where indicated, flat washers.

1. Hot-dip galvanize or provide mechanically deposited, zinc coating where item being fastened is indicated to be galvanized.

D. Anchors, General: Anchors capable of sustaining, without failure, a load equal to six times the load imposed when installed in unit masonry and four times the load imposed when installed in concrete, as determined by testing according to ASTM E 488/E 488M, conducted by a qualified independent testing agency.

E. Cast-in-Place Anchors in Concrete: Either threaded type or wedge type unless otherwise indicated; galvanized ferrous castings, either ASTM A 47/A 47M malleable iron or ASTM A 27/A 27M cast steel. Provide bolts, washers, and shims as needed, all hot-dip galvanized per ASTM F 2329.

F. Post-Installed Anchors: Torque-controlled expansion anchors or chemical anchors.

1. Material: Alloy Group 1 stainless-steel bolts, ASTM F 593, and nuts, ASTM F 594.

G. Slotted-Channel Inserts: Cold-formed, hot-dip galvanized-steel box channels (struts) complying with MFMA-4, 1-5/8 by 7/8 inches by length indicated with anchor straps or studs not less than 3 inches long at not more than 8 inches o.c. Provide with temporary filler and tee-head bolts, complete with washers and nuts, all zinc-plated to comply with ASTM B 633, Class Fe/Zn 5, as needed for fastening to inserts.

2.04 MISCELLANEOUS MATERIALS

A. Shop Primers: Provide primers that comply with Sections 09911 "Exterior Paints" and 09912 "Interior Paints."

B. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.

C. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187/D 1187M.

D. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107/C 1107M. Provide grout specifically recommended by manufacturer for interior and exterior applications.

2.05 FABRICATION, GENERAL

A. Shop Assembly: Preassemble items in the shop to greatest extent possible. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.

B. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.

C. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.

D. Form exposed work with accurate angles and surfaces and straight edges.

E. Weld corners and seams continuously to comply with the following:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

F. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners or welds where possible. Where exposed fasteners are required, use

Phillips flat-head (countersunk) fasteners unless otherwise indicated. Locate joints where least conspicuous.

G. Fabricate seams and other connections that are exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.

H. Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.

I. Provide for anchorage of type indicated; coordinate with supporting structure. Space anchoring devices to secure metal fabrications rigidly in place and to support indicated loads.

J. Where units are indicated to be cast into concrete or built into masonry, equip with integrally welded steel strap anchors, 1/8 by 1-1/2 inches, with a minimum 6-inch embedment and 2-inch hook, not less than 8 inches from ends and corners of units and 24 inches o.c., unless otherwise indicated.

2.06 MISCELLANEOUS FRAMING AND SUPPORTS

A. General: Provide steel framing and supports not specified in other Sections as needed to complete the Work.

B. Fabricate units from steel shapes, plates, and bars of welded construction unless otherwise indicated. Fabricate to sizes, shapes, and profiles indicated and as necessary to receive adjacent construction.

1. Fabricate units from slotted channel framing where indicated.
2. Furnish inserts for units installed after concrete is placed.

C. Galvanize and prime miscellaneous framing and supports.

2.07 SHELF ANGLES

A. Fabricate shelf angles from steel angles of sizes indicated and for attachment to concrete framing. Provide horizontally slotted holes to receive 3/4-inch bolts, spaced not more than 6 inches from ends and 24 inches o.c., unless otherwise indicated.

1. Provide mitered and welded units at corners.
2. Provide open joints in shelf angles at expansion and control joints. Make open joint approximately 2 inches larger than expansion or control joint.

B. For cavity walls, provide vertical channel brackets to support angles from backup masonry and concrete.

C. Galvanize and prime shelf angles.

D. Furnish wedge-type concrete inserts, complete with fasteners, to attach shelf angles to cast-in-place concrete.

2.08 METAL LADDERS

A. General:

1. Comply with ANSI A14.3.

B. Steel Ladders:

1. Space siderails 18 inches apart unless otherwise indicated.
2. Siderails: Continuous, 1/2-by-2-1/2-inch steel flat bars, with eased edges.
3. Rungs: 1-inch-diameter steel bars.
4. Fit rungs in centerline of siderails; plug-weld and grind smooth on outer rail faces.
5. Provide nonslip surfaces on top of each rung, either by coating rung with aluminum-oxide granules set in epoxy-resin adhesive or by using a type of manufactured rung filled with aluminum-oxide grout.
6. Support each ladder at top and bottom and not more than 60 inches o.c. with welded or bolted steel brackets.
7. Galvanize and prime ladders, including brackets.

2.09 STRUCTURAL-STEEL DOOR FRAMES

A. Fabricate structural-steel door frames from steel shapes, plates, and bars of size and to dimensions indicated, fully welded together, with 5/8-by-1-1/2-inch steel channel stops, unless otherwise indicated. Plug-weld built-up members and continuously weld exposed joints. Secure removable stops to frame with countersunk machine screws, uniformly spaced at not more than 10 inches o.c. Reinforce frames and drill and tap as necessary to accept finish hardware.

1. Provide with integrally welded steel strap anchors for securing door frames into adjoining concrete or masonry.

B. Extend bottom of frames to floor elevation indicated with steel angle clips welded to frames for anchoring frame to floor with expansion shields and bolts.

C. Galvanize and prime steel frames.

2.10 LOOSE BEARING AND LEVELING PLATES

A. Provide loose bearing and leveling plates for steel items bearing on masonry or concrete construction. Drill plates to receive anchor bolts and for grouting.

B. Galvanize and prime plates.

2.11 LOOSE STEEL LINTELS

A. Fabricate loose steel lintels from steel angles and shapes of size indicated for openings and recesses in masonry walls and partitions at locations indicated. Fabricate in single lengths for each opening unless otherwise indicated. Weld adjoining members together to form a single unit.

B. Size loose lintels to provide bearing length at each side of openings equal to 1/12 of clear span, but not less than 8 inches unless otherwise indicated.

C. Galvanize and prime loose steel lintels.

2.12 STEEL WELD PLATES AND ANGLES

A. Provide steel weld plates and angles not specified in other Sections, for items supported from concrete construction as needed to complete the Work. Provide each unit with no fewer than two integrally welded steel strap anchors for embedding in concrete.

2.13 FINISHES, GENERAL

A. Finish metal fabrications after assembly.

B. Finish exposed surfaces to remove tool and die marks and stretch lines, and to blend into surrounding surface.

2.14 STEEL AND IRON FINISHES

A. Galvanizing: Hot-dip galvanize items as indicated to comply with ASTM A 153/A 153M for steel and iron hardware and with ASTM A 123/A 123M for other steel and iron products.

1. Do not quench or apply post galvanizing treatments that might interfere with paint adhesion.

B. Preparation for Shop Priming Galvanized Items: After galvanizing, thoroughly clean railings of grease, dirt, oil, flux, and other foreign matter, and treat with metallic phosphate process.

C. Shop prime iron and steel items unless they are to be embedded in concrete, sprayed-on fireproofing, or masonry, or unless otherwise indicated.

1. Shop prime with primers specified in Sections 09911 "Exterior Paints" and 09912 "Interior Paints."

D. Preparation for Shop Priming: Prepare surfaces to comply with SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."

E. Shop Priming: Apply shop primer to comply with SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting.

1. Stripe paint corners, crevices, bolts, welds, and sharp edges.

PART 3 - EXECUTION

3.01 INSTALLATION, GENERAL

A. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.

B. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade surfaces of exterior

units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.

C. Field Welding: Comply with the following requirements:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

D. Fastening to In-Place Construction: Provide anchorage devices and fasteners where metal fabrications are required to be fastened to in-place construction. Provide threaded fasteners for use with concrete and masonry inserts, toggle bolts, through bolts, lag screws, wood screws, and other connectors.

E. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.

F. Corrosion Protection: Coat concealed surfaces of aluminum that come into contact with grout, concrete, masonry, wood, or dissimilar metals with the following:

1. Cast Aluminum: Heavy coat of bituminous paint.
2. Extruded Aluminum: Two coats of clear lacquer.

3.02 INSTALLING MISCELLANEOUS FRAMING AND SUPPORTS

A. General: Install framing and supports to comply with requirements of items being supported, including manufacturers' written instructions and requirements indicated on Shop Drawings.

B. Anchor supports for overhead doors securely to, and rigidly brace from, building structure.

C. Support steel girders on solid grouted masonry, concrete, or steel pipe columns. Secure girders with anchor bolts embedded in grouted masonry or concrete or with bolts through top plates of pipe columns.

1. Where grout space under bearing plates is indicated for girders supported on concrete or masonry, install as specified in "Installing Bearing and Leveling Plates" Article.

D. Install pipe columns on concrete footings with grouted baseplates. Position and grout column baseplates as specified in "Installing Bearing and Leveling Plates" Article.

1. Grout baseplates of columns supporting steel girders after girders are installed and leveled.

3.03 INSTALLING BEARING AND LEVELING PLATES

A. Clean concrete and masonry bearing surfaces of bond-reducing materials, and roughen to improve bond to surfaces. Clean bottom surface of plates.

B. Set bearing and leveling plates on wedges, shims, or leveling nuts. After bearing members have been positioned and plumbed, tighten anchor bolts. Do not remove wedges or shims but, if protruding, cut off flush with edge of bearing plate before packing with nonshrink grout. Pack grout solidly between bearing surfaces and plates to ensure that no voids remain.

3.04 ADJUSTING AND CLEANING

A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas. Paint uncoated and abraded areas with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.

1. Apply by brush or spray to provide a minimum 2.0-mil dry film thickness.

B. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780/A 780M.

END OF SECTION 05500

SECTION 06415 - METAL COUNTERTOPS

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes stainless-steel countertops.

1.02 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: Include plans, sections, details, and attachments to other work. Detail fabrication and installation, including field joints.

1.03 DELIVERY, STORAGE, AND HANDLING

A. Deliver metal countertops only after casework has been completed in installation areas.

B. Keep finished surfaces covered with polyethylene film or other protective covering during handling and installation.

1.04 FIELD CONDITIONS

A. Field Measurements: Verify actual dimensions of construction to receive metal countertops by field measurements before fabrication.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Stainless-Steel Sheet: ASTM A 240/A 240M, Type 316L.

B. Sealant for Countertops: Manufacturer's standard sealant of characteristics indicated below that complies with applicable requirements in Section 079200 "Joint Sealants."

1. Mildew-Resistant Joint Sealant: Mildew resistant, single component, nonsag, neutral curing, silicone.
2. Color: Clear.

2.02 STAINLESS-STEEL COUNTERTOPS

A. Countertops: Fabricate from 0.062-inch-thick, stainless-steel sheet. Provide smooth, clean exposed tops and edges in uniform plane, free of defects. Provide front and end overhang of 1 inch over the base cabinets.

1. Joints: Fabricate countertops without field-made joints.
2. Weld shop-made joints.
3. Sound deaden the undersurface with heavy-build mastic coating.
4. Extend the top down to provide a 1-inch-thick edge with a 1/2-inch return flange.

5. Form the backsplash coved to and integral with top surface, with a 1/2-inch-thick top edge and 1/2-inch return flange.

2.03 STAINLESS-STEEL FINISH

A. Grind and polish surfaces to produce uniform, directional satin finish matching No. 4 finish, with no evidence of welds and free of cross scratches. Run grain with long dimension of each piece. When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces clean.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of metal countertops.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. Install metal countertops level, plumb, and true; shim as required, using concealed shims.

B. Field Jointing: Where possible, make field jointing in the same manner as shop jointing; use fasteners recommended by manufacturer. Prepare edges to be joined in shop so Project-site processing of top and edge surfaces is not required. Locate field joints where shown on Shop Drawings.

C. Secure tops to cabinets with Z- or L-type fasteners or equivalent; use two or more fasteners at each front, end, and back.

D. Abut top and edge surfaces in one true plane, with internal supports placed to prevent deflection.

E. Seal junctures of tops, splashes, and walls with mildew-resistant silicone sealant or another permanently elastic sealing compound recommended by countertop material manufacturer.

3.03 CLEANING AND PROTECTION

A. Repair or remove and replace defective work as directed on completion of installation.

B. Clean finished surfaces, touch up as required, and remove or refinish damaged or soiled areas to match original factory finish, as approved by Architect.

C. Protection: Provide 6-mil plastic or other suitable water-resistant covering over the countertop surfaces. Tape to underside of countertop at a minimum of 48 inches o.c. Remove protection at Substantial Completion.

END OF SECTION 06415

SECTION 10800 - TOILET, BATH, AND LAUNDRY ACCESSORIES

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Washroom accessories.

B. Owner-Furnished Contractor Installed Material:

1. Single, jumbo roll, surface mounted toilet paper dispenser, SST finish: (1) for each toilet stall.

1.02 ACTION SUBMITTALS

A. Product Data: For each type of product indicated. Include the following:

1. Construction details and dimensions.
2. Anchoring and mounting requirements, including requirements for cutouts in other work and substrate preparation.
3. Material and finish descriptions.
4. Features that will be included for Project.
5. Manufacturer's warranty.

B. Samples: Full size, for each accessory item to verify design, operation, and finish requirements.

1. Approved full-size Samples will be returned and may be used in the Work.

C. Product Schedule: Indicating types, quantities, sizes, and installation locations by room of each accessory required.

1. Identify locations using room designations indicated.
2. Identify products using designations indicated.

1.03 INFORMATIONAL SUBMITTALS

A. Warranty: Sample of special warranty.

1.04 CLOSEOUT SUBMITTALS

A. Maintenance Data: For toilet and bath accessories to include in maintenance manuals.

1.05 QUALITY ASSURANCE

A. Source Limitations: For products listed together in the same Part 2 articles, obtain products from single source from single manufacturer.

1.06 COORDINATION

A. Coordinate accessory locations with other work to prevent interference with clearances required for access by people with disabilities, and for proper installation, adjustment, operation, cleaning, and servicing of accessories.

B. Deliver inserts and anchoring devices set into concrete or masonry as required to prevent delaying the Work.

1.07 WARRANTY

A. Special Mirror Warranty: Manufacturer's standard form in which manufacturer agrees to replace mirrors that develop visible silver spoilage defects and that fail in materials or workmanship within specified warranty period.

1. Warranty Period: 15 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Stainless Steel: ASTM A 666, Type 304, 0.031-inch minimum nominal thickness unless otherwise indicated.

B. Fasteners: Screws, bolts, and other devices of same material as accessory unit and tamper-and-theft resistant where exposed, and of galvanized steel where concealed.

2.02 WASHROOM ACCESSORIES

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. A & J Washroom Accessories, Inc.
2. American Specialties, Inc.
3. Bobrick Washroom Equipment, Inc.
4. Bradley Corporation.
5. GAMCO Specialty Accessories; a division of Bobrick Washroom Equipment, Inc.
6. Tubular Specialties Manufacturing, Inc.

B. Toilet Tissue (Jumbo-Roll) Dispenser:

1. Owner furnished, Contractor Installed.

C. Grab Bar:

1. Mounting: Flanges with concealed fasteners.
2. Material: Stainless steel, 0.05 inch thick.

a. Finish: Smooth, No. 4 finish (satin) on ends and slip-resistant texture in grip area.

3. Outside Diameter: 1-1/2 inches.

4. Configuration and Length: As indicated on Drawings.

D. Individual, Curved, Vandal Resistant Hook:

1. Description: Curved hook, 0.188-inch nominal-thickness, held by 0.141-inch-thick, stainless-steel bracket punched with not less than two holes for fastening with security fastener. Provide friction washer assembly, adjustable with a nonremovable security screw that maintains pressure on hook and allows hook to pivot when load exceeds preset limit.
2. Material and Finish: Stainless steel, No. 4 finish (satin).

2.03 FABRICATION

A. General: Fabricate units with tight seams and joints, and exposed edges rolled. Hang doors and access panels with full-length, continuous hinges. Equip units for concealed anchorage and with corrosion-resistant backing plates.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install accessories according to manufacturers' written instructions, using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in locations and at heights indicated.

B. Grab Bars: Install to withstand a downward load of at least 250 lbf, when tested according to ASTM F 446.

3.02 ADJUSTING AND CLEANING

A. Adjust accessories for unencumbered, smooth operation. Replace damaged or defective items.

B. Remove temporary labels and protective coatings.

C. Clean and polish exposed surfaces according to manufacturer's written recommendations.

END OF SECTION 10800

SECTION 11680 - PLAYGROUND EQUIPMENT

PART 1 - GENERAL

1.01 GENERAL CONDITIONS: As specified in Section 00700.

1.02 DESCRIPTION OF WORK

Furnish all materials, accessories, labor, tools and equipment required for the preparation and installation of playground equipment as indicated on the drawings and specified herein.

1.03 REFERENCES

A. U.S. Consumer Product Safety Commission Publication (CPSC) 3325, "Handbook for Public Playground Safety", November 2010 (or most current edition).

B. ASTM F1292 Standard Specification for Impact Attenuation of Surfacing Materials within the Use Zone of Playground Equipment

C. ASTM F1487 Standard Consumer Safety Performance Specification for Playground Equipment for Public Use

1.04 SUBMITTALS

A. The following items shall be submitted as a complete set: piecemeal submittals shall not be acceptable and the time allotted for review of the submittal shall not commence until the complete set is received by the County. Claims for delay due to the contractor's failure to provide complete submittals shall not be entertained by the County and all costs, time lost, etc. shall be the contractor's sole concern and responsibility.

1. One (1) each original affidavit(s) signed by the manufacturer(s) and supplier(s) of the playground equipment proposed to be furnished under this Section certifying that such materials delivered to the project site conform to the requirements of these specifications.

2. Three (3) copies of the manufacturer's descriptive technical literature of all components it proposes to use in the playground equipment system provided for this project. The latest manufacturer's product data shall be submitted to ensure that the latest up-to-date models are used. All literature shall be originals, (copies will not be accepted) with all technical data (dimensions, gauges, thicknesses, material description, clear zone requirements, etc.); sakes brochures or marketing literature shall not be acceptable to satisfy this obligation.

3. A layout plan (scaled at 1/2' = 1'-0" minimum) of the complete playground equipment system proposed for the project consisting of the following information:

a. Dimensions of the overall effective playground surface area (less edge transitions and curbing) required for the project and overall dimensional layouts for the entire installation including edge transitions and perimeter edge treatments. Provide dimensions necessary for laying out the equipment for installation.

b. All components shall be clearly distinguishable and labeled with the manufacturer's model number for cross referencing of manufacturer's descriptive literature and verification of satisfaction of the minimum requirements of this section.

c. Clearly label all deck heights

d. Clearly label and demarcate all play components/elements that satisfy the 2010 ADA Standards for Accessible Design and the U.S. Consumer Product Safety Commission's requirements for playgrounds.

e. Demarcate and dimension all minimum fall safety zones (in accordance with the most stringent and up to date standards) for each play element that requires Such and minimum distances required between adjacent play elements or equipment, as applicable.

f. Dimension distances from ends of slide-type and climbing-type elements to edge of effective playground surfacing area when such is less than 8-feet.

4. Manufacturer's installation manual complete with instructions for each of the products being installed.

5. An example of the manufacturer's warranty document to be issued for this project that satisfies the terms of the warranty required of this section.

No ordering of materials shall be done until all of the submittal (s) specified above have been approved by the Director.

B. The Contractor shall furnish to the Director three (3) copies of a plan with the proposed playground equipment shown placed within the extents of the pad provided and indicating clear distances per "handbook for Public Playground Safety" of the U.S. Consumer Product Safety Commission are maintained.

C. The following submittals shall be submitted after installation is complete but prior to acceptance of the playground equipment system:

1. Provide written certification by a Certified Playground Safety Inspector registered with the National Playground and Safety Institute (NPSI) that the playground installation conforms to the CPSC's current edition of the Handbook for Public Playground Safety, the 2010 ADA Accessible Design Standards and the applicable ASTM standards. The written certification shall include the CPSI's certificate and professional contact information. Cost for this work shall not be paid for separately but shall be incidental to the project.

2. The Contractor shall furnish to the Director three (3) copies of the warranty information as described in Section 2.0, B specific for this project.

3. Furnish one original and two copies of the contractor's Guarantee.

1.05 STORAGE OF MATERIAL

A. All products shall be delivered to the job site, packed separately and properly

labeled. Contractor shall immediately review delivered products against the packing list and complete inventory listing of parts to determine that all requisite components are delivered to the project site in acceptable condition.

B. Deliver, handle, store and protect products to prevent damage and to maintain security.

1.06 QUALITY ASSURANCE

A. Installation foreman shall have not less than five (5) years prior experience of similar installations in the State of Hawaii dating back a minimum of one calendar year from the projected installation date for this project. The contractor shall submit a detailed resume of work for the installation foreman listing projects, locations, customer contact information to coordinate and review the component parts of the playground equipment system to prove compliance with this requirement.

B. The installation foreman shall be present at the job site personally overseeing all playground equipment preparatory, installation and cleanup work **at all times.**

C. The playground equipment installation contractor shall be certified by the playground equipment manufacturer for installation of its product. The contractor shall submit, prior to commencement of installation, a letter specifically prepared for this project (naming the contractor's company, the project name and number) attesting to their certification.

1.07 GUARANTEE

The playground equipment installation contractor shall provide a written guarantee, on Its company letterhead signed by one of its corporate officers that provides for the full replacement of any defective parts or components and of all stainless steel fasteners that exhibit signs of rust within one year of acceptance of the project.

1.08 WARRANTY

A. Manufacturer to warrant all equipment to be free of defects in manufacturing and material.

B. Manufacturer to provide a 100 year limited warranty for all stainless steel fasteners, aluminum posts, clamps, beams and caps, against structural failure due to corrosion/natural deterioration or manufacturing defects.

C. Manufacturer to provide a 15 year limited warranty for all plastic and steel components against structural failure due to corrosion/natural deterioration or manufacturing defects.

D. Manufacturer to provide a 5-10 year limited warranty for all structural steel frames against structural failure due to natural deterioration or manufacturing defects.

E. Manufacturer to provide 3 year limited warranty for all other parts against structural failure die to natural deterioration or manufacturing defects.

F. Manufacturer to provide a 15 year limited warranty for on all perforated steel decks; stainless steel slides aluminum slides and tubular steel parts.

1.09 SAFETY GUIDELINES AND STANDARDS:

A. All materials and equipment shall conform to the current issue of the "Handbook for Public Playground Safety" published by the consumer Product Safety commission (C.P.S.C.) and ASTM F1487. The contractor, manufacturer and playground Installation subcontractor shall be responsible for correcting all violations of the C.P.S.C. Guidelines and ASTM F1487, to the satisfaction of the Director, should they be found identified after installation. All labor, equipment and material costs associated with the correction of these violations shall be borne solely by the contractor.

B. The playground equipment shall satisfy the requirements of the current ADA Accessibility Guidelines (ADAAG) Section 15.6 Play Areas. Additional play equipment components /elements required beyond those listed in this section shall be provided by the Contractor incidental to this work such that the minimum accessibility requirements are satisfied.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. The playground equipment described in this section shall be an integrated system provided by a single playground equipment supplier for the expressed purpose of creating a unified playground experience that will be warranted by that single entity. Assembling equipment sourced from different suppliers to satisfy the minimum requirements for this project is expressly prohibited.

1. Manufacturer shall have a minimum of ten (10) years of documented experience in manufacturing playground equipment systems in the United States of America similar to that required of this project.

2. For reasons of convenience and to establish minimum standards of quality, character, design aesthetics, performance, functionality and experiential quality for this project. The products of the following manufacturer is incorporated into these specifications in addition to the general descriptions of the minimum required playground components:

GameTime®, a PLAYCORE company

3. The products of other manufacturers not listed herein shall be pre-qualified in accordance with paragraph 6.2 SUBSTITUTION OF MATERIALS AND EQUIPMENT of the County's General Requirements and Covenants as amended by the Special Provisions.

The burden of proof as to the comparative quality and suitability of any alternate brand or make shall be upon the bidder, and it shall furnish, at its own expense, all information relating thereto at the time of making such a request. The County shall be the sole judge as to the suitability of the alternate brand or make, and its decision shall be final. Additionally, the requestor shall identify the components it proposes to use in satisfaction of the specific play equipment components described in paragraph 2.02.E of this section. Approval of any substitution request does not inherently provide approval for derivations from any other requirement of this section or of the project.

At minimum, the following shall be provided in order for the County to determine acceptability of the products proposed for substitution:

a. A complete manufacturer's design guide/handbook, in color, that depicts the products it proposed for consideration on this project as individual components and as part of larger system in a real-world type application appropriately marked and labeled for ease of reference by the County.

b. A parts sheet and/or installation sheet that clearly depict the method of installation/attachment to the overall system and that identify the appurtenances and accessories required for installation.

2.02 PLAY EQUIPMENT

A. Playground equipment must be of modular design and include all elements listed in the specifications and shall fit within the Buildable Playground Area (hereinafter "BPA") as shown on the plans, inclusive of all requisite fall safety zones, edge transitions, perimeter curbing, additional required surfacing, graded areas, and other physical improvements.

B. The colors of all exposed components of the playground equipment (posts, decks, brackets, panels, roofs, shades, slides, rails, supports, play elements, etc.) shall be selected specifically by the Director prior to ordering. Color selections shall be made from all available manufacturers' colors for each component irrespective of price range differences except that custom-mixed color services available only upon special request shall not be incorporated into this project. There shall be no limitation as to the number of colors that may be incorporated throughout the playground equipment.

C. The play areas shall be configured such that the transfer platform is in close approximation to the entry walkway.

D. The following list of play equipment and components is intended to set forth the minimum character, aesthetic, function and experiential qualities desired for this project.

1. Play Area (5-12 year olds)

a. Main deck upright supports shall be 5" diameter embedded a minimum of 32" (or greater as required by manufacturer); shall not be less than 32" whatsoever.

b. Play element/component list:

i. (3) Perforated metal arched shaped roofs

GameTime®: 80104 Perf Metal Roof
Miracle®: 714-565 Mesh Roof w/ Arches

ii. Rotationally molded double-bedway straight slide attached to a min. 48" deck.

GameTime®: 90508 Double Zip Slide
Miracle®: 714-565 Mesh Roof w/ Arches

iii. Rotationally molded 30” diameter straight tube slide attached to a min. 36” deck.

GameTime®: 90286 Straight Tube Slide
Miracle®: 714-739-3 Straight Tube Slide

iv. Rotationally molded straight wavy slide attached to a min. 36" deck.

GameTime®: 90503 Wave Zip Slide
Miracle®: 714-670 Chameleon II Slide

v. Two-Deck SpanTrain Themed Play Event; minimum 36” x 72”; to include train themed HDPE panel enclosures, Rotationally molded boiler, smoke stack,& cowcatcher, Rotationally molded 30”diameter 36” long crawl tube, and metal arch roof.

GameTime®: 81686 Train Locomotive
Miracle®: 714-646-2B (2) Train Front Wheel
714-646-3B Train Rear Wheel
714-646-1 Full Miralene Train Window
714-602-11 (2) Steel Window Panel
714-565-TRN Train Mesh Roof w/ Arches
Mesh Roof Extensions w/ Arches
714-757-34TRN Climbing Wall Train Cow Catcher

vi. Arched Bridge Link

GameTime®: 90393: Mini Arch Bridge
Miracle®: 714-970-49 Arch Bridge

vii. (2) Train Themed HDPE Panels

GameTime®: 90465 Train Cabin
Miracle®: See v.

viii. Seat and table below deck

GameTime®: 81665: Seat and Table for Two
Miracle®: 714-715-7B Rest Stop
714-7158B Tot Table

ix. Arched Metal Climber with rubber coated footholds

GameTime®: 90072 Fat Pipe Climber
Miracle®: 714-967 Curved Climber

x. Rotationally molded curved crawl tube connecting decks at a min. 36” over two-deck spans.

GameTime®: 90595 “S” Crawl Tube
Miracle®: 714-745-6 “S” Crawl Tube

xi. Rotationally molded wavy plastic climber attached to a min 36” deck.

GameTime®: 90545 Wave Climber
Miracle®: 714-787 Tot Rock Climber

Xii Rotationally molded vertical climber

GameTime®: 90592 Ridge Climber
Miracle®: 714-608-3 Wavy Wedge Wall Walker

xiii. Transfer platform and step

GameTime®: 80688 transfer platform
Miracle®: 714-851-49 Square Transfer Point

xiv. 90 degree bridge connecting min. 36" high decks over min. 96" span.

GameTime®: 90583 Funnel Bridge
Miracle®: 714-856-L9 90 Degree Level Ramp

xv. Minimum (2) rotationally molded play panels

GameTime®: rotationally molded play panels
Miracle®: 714-983-1 Marble Races Panel
714-756 Sight-N-Sound Panel

xvi. Whistle

GameTime®: 81695 Train Whistle
Miracle®: 714-796-P1 Post Mounted Bell

xvii. Spiraling metal climber with HDPE steps

GameTime®: 90668 Spiral Step climber
Miracle®: 714-867-25 Twisted Vine Climber 4' Deck

xviii. Freestanding Playhouse with arched uprights, HDPE walls panels, HDPE roof panels, HDPE countertops, HDPE chimney, metal seat, and min. 2 themed activity panels.

GameTime®: 36059 Nature Discover Playhouse
Miracle®: 714-713-7B Store Front Panel
714-966-3B (2) Fence Post
714-966-2B Sit-N-See
714-866-2 Triple Play Roof

xix. (7) Freestanding rotationally molded trees configured in a maze

GameTime®: 39017 Large Conifer Maze
Miracle®: 704-620 (7) Big Timber Post Topper

xx. Freestanding straight post spinner

GameTime®: 36035 Centrix
Miracle®: 945-1 Saddle Seat w/ Angled Post

xxi. Freestanding belt seat rocker

GameTime®: 36034 Toddle Rocker
Miracle®: 826 Balance Board w/ Posts

c. Provide as many ground level activities as required either at low level of deck or free standing elements. A minimum of these activities shall be Compression-molded plastic panels. Two (2) color minimum each panel.

Miracle®: 900-P1 Steering Wheel
796-P1 Post Mounted Bell
714-994 Fun Fone

d. Barriers: Provide compression molded plastic barriers, no pipe style barriers allowed unless specifically called for on the plans.

e. Decks: Provide an array of connected, multi-level deck areas at the following specified minimum heights and areas to create an engaging and challenging experience for children utilizing the playground equipment with 5" diameter posts for the main deck-support uprights. All decks shall be completely covered with roofs.

i. Minimum of 36 square feet of PVC coated decks at 36" minimum height.

Miracle®: 31 square feet at 36”
Miracle®: 56 square feet at 48”

ii. Minimum of 12 square feet of PVC coated decks at 42" minimum height.

Miracle®: 16 square feet at 42”

f. Though not listed or described in detail, the contractor shall provide all appurtenant components and accessories necessary for a complete system based on these requirements, which shall include, but not necessarily be limited to, additional, decks, transitions, brackets, supports, panels, rails, fittings, fasteners, etc., which are the contractor's responsibility to provide for as a part of its complete play equipment package.

g. Substitutions: The Director shall have the sole right to determine the acceptability of any proposed substitution of play components or play systems based on factors such as durability, physical effort required, play experience, aesthetics, maintenance care requirements, etc. The Director's decision shall be final. The contractor shall solely bear the burden of proof that its products proposed for use on this project meets or exceeds the intent of the play equipment component list and ALL requirements of these specifications, to the satisfaction of the Director.

h. The play equipment layouts provided on the plan sheets that accompany these specifications is intended to illustrate to all prospective bidders that the play equipment requirements included herein can be satisfied within the buildable play area required of this project.

2.03 MATERIALS

A. Playground Equipment shall comply with the latest edition of the "Handbook for Public Playground Safety" of the U.S. Consumer Product Safety Commission, ASTM

F 1487 and IPEMA certified.

1. For posts that are a plate/surface-mounting system: mounting brackets, plates flanges, and fittings must be manufactured of non-corrosive materials. Expansion bolts used for installation may be set in place and hand tightened as early as three (3) days after concrete pout but must NOT be fully-anchored until after 21 calendar days.

2. Footings: Unless otherwise specified, the bury on all footings shall be 34" below Finished Grade (FG) on all in-ground play events/posts.

3. Mounting panel brackets, connecting angles, fasteners, and collars must be constructed of non-corrosive metal and must be tamper-resistant. All connecting bolts and washers must be stainless steel per ASTM F 9879. All primary fasteners shall include a locking patch type material that will meet the minimum torque requirements of IFI-125. Manufacturer to provide special tools for pinned tamperproof fasteners.

4. All materials shall be structurally sound and suitable for safe play.

5. All materials and supplies furnished under this project shall be new and protected from corrosion. Anti-corrosive treatments shall meet the following requirements.

   i. Polyvinyl Chloride (PVC) coating: All metal components to be PVC coated shall be thoroughly cleaned in a hot phosphatizing pressure washer, and then primed with a water-based thermosetting solution. Primed parts shall be preheated prior to dipping in U.V. stabilized, liquid polyvinyl chloride, and then salt cured at approximately 400 degrees. The finished coating shall be approximately .080" (+/- .020") thick at 85 durometer hardness and have a matte finish.

   OR

   Polyethylene (PE) coating: All metal components to be PE coated shall be thoroughly cleaned in a hot phosphatizing pressure washer. Primed parts shall be preheated prior to dipping in U.V. Stabilized, polyethylene copolymer-based thermoplastic powder until the coating reached its target thickness, and then salt cured at approximately 400 degrees. The finished coating shall be 45 to 55 mils on the wear surfaces and 30 mils on other surfaces.

   ii. Polyester Powder coat finish: All metal components shall be thoroughly cleaned and phosphatized through a minimum five-stage bath system. Parts are then thoroughly dried, preheated and processed through a set of automatic powder spray guns where an epoxy primer is applied. The parts are allowed to cool and then pass through a second set of automatic powder spray guns. A minimum .002" of architectural-grade Super-Durable polyester TGIC powder is applied. The parts are oven-cured at 400 degrees F metal temperature for 10-minutes. The average film thickness is .006".

   The finish must be formulated and tested per the following ASTM standards. Each color must meet or exceed the ratings listed below:

   ASTM D3363 Hardness:..... \rating 2H
   ASTM C2794 Impact..... 80 inch-pounds min.

ASTM B117 & D 1654 Salt Fog Resistance:. 4,000 hrs; rating 7 or greater
ASTM G 154 UV Exposure:..... (340 bulb) 3,000 hours, rating delta E of 2, and 90 percent gloss retention
ASTM D3359 Adhesion:..... .(Method B) rating 5B

iii. Rotationally Molded Poly Parts: These parts shall be molded using prime compounded linear low-density polyethylene with a tensile strength of 2500 psi per ASTM D638 and with color and UV-Stabilizing additives.

iv. Permalene Parts: These parts shall be manufactured from 3/4: thick high-density polyethylene that has been specially formulated for optimum U.V. stability and color retention. Products shall meet or exceed density of .960 G/cc per ASTM D1595, tensile strength of 2400 PSI per ASTM D638. Products shall meet or exceed density of .960 G/cc per ASTM D1505, tensile strength of 2400 PSI per ASTM D638.

B. Composite System Materials

1. Decks: All decks shall be of modular design and have drain holes on the standing surface. Decks shall be manufactured from a single piece of low carbon 12 GA (.105") minimum sheet steel conforming to ASTM specification A-569. The sheet shall be perforated then flanged formed and reinforced as necessary to ensure structural integrity. The unit shall be PVC or PE coated.

2. Posts: Post length shall vary depending upon the intended use and shall be a minimum of 42" above the deck height. All posts shall be powdercoated to specified color. All posts shall have a "finished grade marker" positioned on the post identifying the 34" bury line required for correct installation and the top of the protective surfacing.

a. Steel Posts

i. All 5" OD steel posts shall be manufactured from tubing with a minimum wall thickness of .120" and shall be galvanized after rolling and shall have both its interior surfaces and the cut ends sprayed with a corrosion resistant coating.

5" OD Steel Post Mechanical Properties:
Yield Strength (min): 50,000 PSI
Tensile Strength (min): 50,000 PSI
Elongation in 2 inches: 25%
Modulus of Elasticity: 29.5 x 1,000,000 PSI

ii. All 3 1/2" OD posts shall be galvanized after rolling and shall have both the I.D. and the cut ends sprayed with a corrosion resistant coating.

3 1/2" OD, 8 ga. 48,000 PSI
Tensile Strength (min) 48,000 PSI
Yield Strength (min) 45,000 PSI

3 1/2" OD, 13 ga.
Tensile Strength (min) 55,000 PSI
Yield Strength (min) 50,000 PSI

iii. All 3 1/2" OD cantilever steel posts shall be manufactured from tubing with a wall thickness of min 8 gauge and shall be galvanized after rolling and shall have both the I.D. and the cut ends sprayed with a corrosion resistant coating.

b. Steel Arch Posts

Shall be an all welded assembly fabricated of 3/5 in. outside diameter, 11 gauge galvanized steel tubing (arch), 4 in. outside diameter, 8 gauge galvanized steel tubing (sleeve), and 1006 cold rolled steel.

c. Aluminum Posts

i. All aluminum posts shall be manufactured from extruded tubing conforming to ASTM B-221 from 6005-T5 if not welded or 6061-T6 if welded. Posts shall have a 5" outside diameter with a /125" wall thickness. Finished with a baked on polyester powder coating.

ii. Aluminum Post Mechanical Properties:

Yield Strength (min):	35,000 PSI
Tensile Strength (min):	38,000 PSI
Elongation in 2 inches:	10%
Modulus of Elasticity:	10 X 1,000,000 PSI

3. Post Caps:

i. Top caps for posts shall be aluminum die cast from high strength aluminum alloy and powdercoated to match the post color. All caps shall be factory installed and secured in place with self sealing drive rivets. A molded low-density polyethylene cap, with drain holes, may be pressed onto the bottom end of the post to increase the footing area.

Yield Strength (min):	21,000 PSI
Tensile Strength (min):	40,000 PSI

ii. A cap, with drain holes, must be pressed onto the bottom end of posts as exposed areas.

4. Steel Tubing:

i. 3.5" OD, 8ga.

Yield Strength (min):	45,000 PSI
Tensile Strength (min):	48,000 PSI

ii. 3.5: OD, 13 ga.

Yield Strength (min):	50,000 PSI
Tensile Strength (min):	55,000 PSI

5. Kick Plates

a. Fabricated from 11 GA (.120") HR flat steel. Fasteners: Primary fasteners shall be socketed ad pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated.

6. Clamps: All clamps, unless otherwise noted, shall be die cast using a 369.1 aluminum alloy and have the following mechanical properties:

Ultimate Tensile:	47,000 PSI
Yield Strength:	28,000 PSI
Elongation:	7% in 2 inches
Shear Strength:	29,000 PSI
Endurance Limit:	20,000 PSI

7. Fasteners: Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated. All primary fasteners shall include a locking patch-type material that will meet the minimum torque requirements of IFI-125. Manufacturer to provide special tools for pinned tamperproof fasteners.

8. Barriers to be fabricated from 7 GA. (.188") HR zinc plated flat steel.

   a. Pipe Barriers:

      i. Weldment comprised of 5/8" solid steel vertical rails, 1 1/8" O.D.x 11 GA (.120") steel horizontal rails with 203 or 303 stainless steel welded inserts with 5/8" internal threads, 1 1/2" x 1 1/2" x 29 1/2" angle iron. Barrier measures 33 7/8" wide x 39 13/16" high. Finish: PVC Coating.

      ii. 90º Bracket: Formed from 1/4" x 1 1/4" HRPO flat steel. Finish: Powdercoat.

9. Spacer Tubes

   a. 6061-T6 aluminum 7/8" O.D. x 1 11/16". Finish Powdercoat.

PART # - EXECUTION

3.01 INSTALLATION AND WORKMANSHIP

A. The layout of the playground equipment shall be verified jointly by the installation contractor and general contractor after the perimeter concrete curb and subsurface grade preparation have been completed and prior to the excavation of any footings or thickened slab conditions. Safety zone limits, slopes, tie-ins, clearance requirements, etc. Shall all be confirmed prior to commencing equipment installation.

B. Excavation for direct-bury footings shall be performed carefully so as to minimally disturb the prepared sub-grade. All posts and supports shall be affixed and completely encase in concrete up to the level of the underside of the safety surfacing system's installation. At no time shall any component of the playground be in contact with native or non-native soil or fill, including any prepared or compacted gravel that could be considered part of the safety surfacing system.

C. Concrete footings/foundations shall be poured directly against the limits of excavation; footings shall not be formed and backfilled. Exposed surface of concrete footings shall be trowelled level and smooth.

D. Installation of the playground equipment shall be performed by the installation contractor that is certified by the manufacturer.

E. Installation shall closely follow all manufacturers' instructions and comply with all applicable manufacturers' recommendations.

F. Installation of Compound Structures and Independent Activities:

1. Conform strictly to manufacturer's instructions using all appropriate materials, tools and accessories as required. Use only experienced personnel trained in play equipment construction. Layout all equipment prior to construction to insure compliance with safety zone clearances.

2. Provide all concrete footings as required to properly place the equipment components.

G. Extreme care shall be exercised at all times during the installation stage of the project to prevent scratching, gouging, denting, twisting, warping, cracking or other result detrimental in any way to the finished product. All damage, regardless of how insignificant it may seem at the time, shall be tagged and photographed, and brought immediately to the attention of the Director. No repairs or touchups shall be implemented until the Director has had the opportunity to investigate the extent of the damage or made his/her determination on whether repair on site is acceptable or full replacement warranted. All items repaired prior to the Director's decision may be rejected at any time by the Director.

H. The Director reserves the sole right to determine whether any blemish, incursion or' damage to any part of the playground necessitates its replacement. All such decisions by the Director shall be final and the costs associated with the removal, replacement and reinstallation by the contractor shall be the contractor's sole responsibility.

I. The Director reserves the right to determine, based on the nature and extent of the damage, whether the corrective action is acceptable as punch-list item or if it is essential to the initial acceptance of the overall system.

J. Any repair approved by the Director shall be implemented in strict accordance with the manufacturer's requirements and shall not in any way void or alter the warranty or guarantees required of the project.

3.02 PROTECTION

Protection of the playground equipment from its arrival on the project site, through construction/installation of the playground equipment and the related playground safety surfacing system, and until acceptance by the County shall be the sole responsibility of the contractor. The contractor is hereby notified that playgrounds under construction are attractive nuisances and it is common for members of the public to circumvent construction barricades to climb upon, vandalize, damage and otherwise use such without authorization.

The contractor is therefore solely responsible to take all measures necessary, beyond the minimally required temporary barricade, to ensure the public does not enter the construction site at all times; park closure hours shall not relieve the contractor of its responsibility to secure its worksite nor shall it shift any responsibility to the County for security or otherwise.

Should the contractor decide to post security personnel on the site, such personnel shall meet be a registered uniformed individual(s) that holds a guard license from the Board of Private Detectives and Guards, Department of Commerce and Consumer Affairs, State of Hawaii in accordance with Hawaii Revised Statutes Chapter 463 and the Director shall be notified in advance of such. The Director shall be provided personnel's name and contact information, company name, insurance and other pertinent information as may be required by the County at the time.

3.03 INSPECTION

A. An authorized representative of the playground equipment supplier shall review and inspect the playground equipment installation to ensure all components (play elements, decks, roofs, panels, etc.) and accessories (bolts, fasteners, connectors, etc.) are correctly installed per the manufacturer's requirements and that the installation as a whole is warrantable and guarantee-able. The representative shall check, at minimum, to see that all components are properly secured, no entrapment/entanglement conditions exist, all moving parts do so freely, all fasteners are properly tightened/secured, etc.

B. The prime contractor (not the playground equipment installation contractor) shall secure the services of an independent Certified Playground Safety Inspector certified by the National Playground Safety Institute, who is not n any way affiliated with the installation contractor or its supplier, to perform a thorough inspection/testing of the completed playground equipment installation in conformance with the NPSI's standards. At minimum, the inspector shall verify compliance with the applicable requirements of the 2010 ADA Standards, U.S. Consumer Product Safety Commission's Handbook for Public Playground Safety, and all referenced ASTM standards.

C. The contractor shall pay for all testing and laboratory fees.

D. The contractor shall coordinate the testing with the Director so that a representative from the County is present during the inspection.

E. The test results shall be provided in a typed or clearly printed format with each test areas identified by a photo and marked on a plan of the play area. Results shall be sent directly to the Director and, at minimum, the report shall include:

a. Name, mailing and business addresses, phone, fax and email addressed of the company the inspector works for.

b. Name, mailing and business addresses, phone, fax and email addresses of the inspector - if different that the company's.

c. County project name and number.

d. Report No.

e. Client name, address and telephone number

f. Location

g. Date

h. Determination of results

i. Certification of company or agency that testing representative works for.

F. The contractor shall send a copy of the inspector's report to the playground equipment supplier and request instruction on the proper resolution of each outstanding condition. No repair work, unless it poses an imminent safety risk, shall be performed prior to obtaining the playground equipment supplier's instructions. At no time shall any corrective work be performed that has not been concurred with by the Director or that would in any way jeopardize or nullify all or part of any warranty or guarantee required of the project.

3.04 CLEAN UP

A. Perform a thorough cleaning of all exposed surfaces of the playground equipment, per the manufacturer's recommendations, prior to final inspection. At minimum, all labels, wrapping, adhesive residue, dirt, dust, shavings, and other superficial blemishes shall be removed.

B. Perform a thorough final cleaning of the entire playground equipment, lubricate all moving parts and visually inspect the condition of the playground prior to acceptance by the County.

3.05 CLOSEOUT

A. The Contractor must submit three (3) copies of its standard maintenance manual to the Director.

B. Contractor must train Director's designated field personnel in proper cleaning and care procedures. This includes training field personnel how to properly use grooming equipment as well as make minor repairs.

C. Extra materials: Contractor shall deliver extra materials, in the amounts specified, to the Department of Parks and Recreation's Maintenance Division's main base yard at 35 Railroad Avenue, Hilo.

1. Provide a minimum of five (5) hand tools and five (5) power drill bits for each type of fastener head used on the playground equipment. They may be the same units used on this project provided they are in acceptable condition.

2. Provide a minimum of five percent (5%) of each type if fastener (i.e., screw, nut and bolt w/washer, etc.), cotter pin, etc. used on this project.

3. Provide a minimum of four (4) sets of each type and color of pole clamps.

4. Provide one (1) container of manufacturer's color-matched touch-up paint for each color metal component.

5. Provide two (2) containers of manufacturer's color-matched repair kit for the deck coating material.

END OF SECTION

SECTION 13120 - METAL BUILDING SYSTEMS

PART 1 - GENERAL

1.01 SECTION INCLUDES

Complete pre-engineered metal building system which includes:

A. Structural steel main building frames and secondary framing including purlins and girts, columns, bracings, engineered and fabricated by the building systems supplier.

B. Steel wall and roof system including flashing, gutters and downspouts.

C. Doors and louvers.

D. Roof accessories including skylights.

1.02 RELATED SECTIONS

A. Section 03300: CAST-IN-PLACE CONCRETE

B. Section 05400: COLD FORMED STEEL FRAMING

C. Section 05500: METAL FABRICATION

D. Section 07620: SHEET METAL FLASHING AND TRIM

E. Section 07920: JOINT SEALANTS

F. Section 08100: STEEL DOORS AND FRAMES

G. Section 09911: EXTERIOR PAINTING

H. Section 09912: INTERIOR PAINTING

I. Section 10200: LOUVERS AND VENTS

J. Section 11482: GYMNASIUM EQUIPMENT

L. Section 11483: INTERIOR SCOREBOARDS

M. Section 11484: GYMNASIUM DIVIDERS

1.03 REFERENCES

A. ASTM A6 - Standard Specification for General Requirements for Rolled Structural Steel Bars, Plates, Shapes, and Sheet Piling.

1. ASTM A36 – Specification for Carbon Structural Steel. ASTM A53 –Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless

2. ASTM A53 – Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.

3. ASTM A123 - ASTM A123 – Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.

4. ASTM A153 – Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.

5. ASTM A325 - Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength

6. ASTM A490- Standard Specification for Structural Bolts, Alloy Steel, Heat Treated, 150 ksi Minimum Tensile Strength.

7. ASTM A500 - Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Round and Shapes.

8. ASTM A501 - Hot-Formed Welded and Seamless Carbon Steel Structural Tubing.

9. ASTM A563 - Standard Specification for Carbon and Alloy Steel Nuts.

10. ASTM A653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

11. ASTM A780 - Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.

12. ASTM A992 - Standard Specification for Structural Steel Shapes.

13. ASTM F594 - Standard Specification for Stainless Steel Nuts.

14. ASTM F844 - Standard Specification for Washers, Steel, Plain (Flat), Unhardened for General Use.

15. ASTM F1554 - Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength.

16. AWS D1.1 – Structural Welding Code – Steel.

17. AWS D1.8 – Structural Welding Code – Seismic Supplement.

18. AWS A2.0 - Standard Welding Symbols.

19. AISI - Specification for the Design of Cold-Formed Steel Structural Members - 1986 Edition with 1989 Addendum.

20. “Specification for Design, Fabrication, and Erection of Structural Steel for Buildings” of the American Institute of Steel Construction.

21. ASTM A570-92 - Specification for Hot-Rolled Carbon Steel Sheet and Strip, Structural Quality.

22. ASTM E1514-93 - Specification for Structural Standing Steam Steel Roof Panel Systems.

23. MBMA Low Rise Building Systems Manual - 1996 Edition.

24. SSPC (Steel Structures Painting Council) - SP-2-89 - Specification for Hand Tool Cleaning.

1.04 SYSTEM DESCRIPTION

A. Clear span rigid frame pinned at the base.

B. Clear opening height: Per design drawings.

C. Bay spacing of 20'-0 as shown on drawings.

D. Primary Framing: Rigid frame of rafter beams and columns, end wall columns and wind bracing over play court, covered walkway, and storage area as shown on plans. Frames shall be "supermarket" style columns, columns shall be straight within 10 feet of the ground. Bottom flange of main rafters shall be no less than 4" wide, and no greater than 14" wide.

E. Secondary Framing: Purlins, girts, eave struts, flange bracing, basketball backstop supports and other items detailed. Roof purlins shall be 12" deep maximum, and spaced a maximum of 5'-0" apart. Wall girts shall be 8" deep minimum and 12" deep maximum.

F. Lateral Bracing: Horizontal loads not resisted by main frame action shall be resisted by rods in the sidewalls and rods in the roof. Rod connections shall NOT punch through webs of columns/rafters. Rod connections to be clevis type with gusset plate welded to columns/rafters. Lateral bracing system shall be 100% redundant. For example, if two rows of bracing are used each set of braces shall be designed using 100% total lateral load. If three rows of bracing are used each set of braces shall be designed using 67% total lateral load. If 4 rows of bracing are used each set of braces shall be designed using 50% total lateral load.

G. Wall and Roof System, Flashing and Gutters: Preformed steel panels and accessory components.

H. Roof accessories including skylights and ventilators: Prismatic skylights and gravity ventilators and clerestory assemble.

I. Roof Slope: 2 in 12 for main roof, 2 in 12 for awnings and storage roof.

1.05 DESIGN REQUIREMENTS (2006 IBC)

A. Members to withstand the following building system loads:

1. Dead Loads

a. Basketball backstops = 3,000 pound concentrated gravity load applied to the bottom flange of every main rafter on column rows 3 thru 12. Load shall be located 16' from end wall as shown in building sections.

b. Wall louvers = see manufacturer

c. Collateral load = 3 psf (insulation, roof vents, lighting, fire sprinkler system)

d. Collateral load = 200 pound concentrated gravity load applied to every roof purlin and wall girt. Load shall be applied at the center of the span.

e. Gym Divider = 20 lb/ft

2. Live load = 20 psf with tributary area load reduction. Minimum reduced live load = 16 psf.

3. Wind load of 105 mph C exposure, Partially Enclosed Building (internal pressure)

4. Seismic use group III, Site Class B, Seismic Design Category E with Sds = 1.550 and Sd1 = 0..664 (Ss = 2.325, S1 = .996)

5. All loads shall be proportioned and applied in accordance with the MBMA Low Rise Building Systems Manual and the 2006 International Building Code.

B. Deflection requirements shall be in accordance with the applicable provisions of the AISC Steel Design Guide Series 3 - Serviceability Design Considerations for Low-Rise Buildings. Maximum lateral deflection shall be H/200.

C. Assembly to permit movement of components without buckling, failure of joint seals, undue stress on fasteners or other detrimental effects, when subject to temperature range of 40 to 100 degrees F.

D. Roof drainage system to withstand rainfall intensity of 6 inches per hour. Size roof drainage system per Uniform Plumbing Code.

1.06 SUBMITTALS

A. Submit as one complete set anchor bolt placement plan, column reactions, and building shop drawings to Structural Engineer at least 2 weeks prior to fabrication.

B. Fabrication to proceed based only on approved anchor bolt plan and building shop drawings.

1.07 QUALITY ASSURANCE

A. Fabricate structural steel members in accordance with MBMA Low Rise Building Systems Manual, and, for items not covered, AISC - Specification for Structural Steel for Buildings.

1.08 QUALIFICATIONS

A. Manufacturer: The company manufacturing the products specified in this Section shall have a minimum of 5 years experience in the manufacture of similar steel building systems in the United States of America.

B. Structural framing and covering shall be the design of a licensed Professional Engineer experienced in design of this work, licensed in the State of Hawai‘i. Structural steel drawings shall be stamped with original signature for use in obtaining the building permit for this project

1.09 FIELD MEASUREMENTS

A. Metal building contractor shall verify that field measurements are as indicated on erection drawings.

1.10 WARRANTY

A. Building manufacturer shall provide manufacturer's standard material warranty of minimum 10 years. The warranty shall include but not limited to warrant against corrosion of material.

B. Metal building contractor shall provide a workmanship warranty of 5 years. The warranty shall include but not limit to warrant against leaking from roofing, siding, flashing, skylights and ventilators.

C. The Surety shall not be liable for manufacturer’s warranty beyond two years of the Contract Acceptance Date.

1.11 ADMINISTRATION

A. All nomenclature shall conform to the MBMA Low Rise Building Systems Manual.

B. Coordination and administration of the work shall be in accordance with the MBMA Low Rise Building Systems Manual - Common Industry Practices.

PART 2 - PRODUCTS

2.01 METAL ROOF SYSTEM

A. Roof System Design:

1. Design roof panels and liner panels in accordance with AISI North American Specification for the Design of Cold-Formed Steel Structural Members.

2. Design roof paneling system to support design live, snow, and wind loads.

3. Endwall Trim and Roof Transition Flashings: Allow roof panels to move relative to wall panels and/or parapets as roof expands and contracts with temperature changes.

B. Roof System Performance Testing:

1. UL Wind Uplift Classification Rating, UL 580: Class 90.

2. Structural Performance Under Uniform Static Air Pressure Difference: Test roof system in accordance with ASTM E 1592.

3. Roof system has been tested in accordance with U.S. Army Corps of Engineers Unified Facilities Guide Specification Section 07 61 13.

C. Roof Panels:

1. Factory roll-formed, 24 inches wide, with 2 major corrugations, 2 inches high (2-3/4 inches including seam), 24 inches on center.

2. Flat of the Panel: Cross flutes 6 inches on center, perpendicular to major corrugations in entire length of panel to reduce wind noise.

3. Variable Width Panels:

    a. For roof lengths not evenly divisible by the 2'-0" panel width, factory-manufactured variable-width (9-inch, 12-inch, 15-inch, 18-inch, and 21-inch-wide) panels shall be used to ensure modular, weathertight roof installation.

    b. Minimum Length: 15 feet.

    c. Supply maximum possible panel lengths..

4. Panel Material and Finish: Special materials, gauges, or colors as applicable for custom designs.

5. Use panels of maximum possible lengths to minimize end laps.

6. Extend eave panels beyond structural line of sidewalls.

7. Factory punch panels at panel end to match factory-punched holes in eave structural member.

8. Panel End Splices: Factory punched and factory notched.

9. Panel End Laps: Locate directly over, but not fastened to, a supporting secondary roof structural member and be staggered, to avoid 4-panel lap-splice condition.

10. End Laps: Floating. Allows roof panels to expand and contract with roof panel temperature changes.

11. Self-Drilling Fasteners: Not permitted in weathering membrane of roof system.

12. Ridge Assembly:

    a. Design ridge assembly to allow roof panels to move lengthwise with expansion and contraction as roof panel temperature changes.

    b. Factory punch parts for correct field assembly.

    c. Install panel closures and interior reinforcing straps to seal panel ends at ridge.

    d. Do not expose attachment fasteners on weather side.

e. Use lock seam plug to seal lock seam portion of panel.

f. High-Tensile Steel Ridge Cover: Span from panel closure to panel closure and flex as roof system expands and contracts.

D. Vapor Retarder:

1. WMP-50, 0.0015-inch minimum thickness, UV-stabilized, white polypropylene, laminated to 30-pound Kraft paper / metalized polyester and reinforced with glass fiber and polyester scrim.

2. Perm Rating: 0.02.

E. Interior Liner Panels:

1. Form panels from 0.015-inch minimum thickness coated steel with minimum yield strength of 80,000 psi.

2. Painted Panel Finish:
   a. Exposed Side: 0.1-mil primer and 0.4-mil minimum interior white polyester paint.
   b. Unexposed Side: 0.3-mil minimum non-color-controlled wash coat.

3. Panel Dimensions: Nominal 36 inches wide with corrugations 1/2 inches high, 3 inches on center.

4. Factory cut panels to lengths required.

F. Provision for Expansion and Contraction:

1. Provision for Thermal Expansion Movement of Roof Panels: Clips with movable tab.

   a. Stainless Steel Tabs: Factory centered on roof clip to ensure full movement in either direction.

   b. Maximum Force of 8 Pounds: Required to initiate tab movement.

   c. Each Clip: Accommodates a minimum of 1.25-inch movement in either direction.

2. Roof: Provide for thermal expansion and contraction without detrimental effects on roof panels, with plus or minus 100-degree F temperature difference between interior structural framework of building and of roof panels.

G. Fasteners:

1. Make connections of roof panels to structural members, except at eaves, with clips with movable stainless steel tabs, seamed into standing seam side lap.

2. Fasten insulation board, bearing plates, and panel clips to structural members with "Scrubolt™" fasteners in accordance with erection drawings furnished by metal building system manufacturer, using factory-punched or field-drilled holes in structural members.

a. Fasteners: Metal-backed rubber washer to serve as torque indicator.

3. Fasteners penetrating metal membrane at the following locations do not exceed the frequency listed:

a. Basic Panel System: 0 per square foot.

b. High Eave Trim, No Parapet: 2 per linear foot.

c. Exterior Eave Gutter: 2 per linear foot.

d. Panel Splices: 2 per linear foot.

e. Gable Trim: 0 per linear foot.

f. High Eave with Parapet: 0 per linear foot.

g. Ridge: 0 per linear foot.

h. Low Eave Structural: 1.5 per linear foot.

H. Accessories:

1. Accessories (i.e., ventilators, skylights, gutters, fascia): Standard with metal building system manufacturer, unless otherwise noted and furnished as specified.

2. Metal Coating on Gutters, Downspouts, Gable Trim, and Eave Trim: "Butler-Cote™ " finish system, full-strength, 70 percent "Kynar 500" or "Hylar 5000" fluoropolymer (PVDF) coating.

3. Location of Standard Accessories: Indicated on erection drawings furnished by metal building system manufacturer.

4. Material used in flashing and transition parts and furnished as standard by metal building system manufacturer may or may not match roof panel material.

a. Parts: Compatible and not cause corrosive condition.

b. Copper and Lead Materials: Do not use with Galvalume or optional aluminum-coated panels.

I. Thermal Performance:

1. Determine thermal performance in accordance with ASTM C 1363 and test U-factors for composite roof section.

2. "Thermax" Insulation Thicknesses: Maximum 4 inches.

J. Physical Properties:

1. WMP-50 Vapor Retarder:

a. For conditions of high interior humidity, UV-stabilized, white polypropylene film.

b. Water Vapor Permeance (perm) Rating, ASTM E 96: 0.02.

c. Minimum Workability Temperature: 20 degrees F.

2. "Thermax" Metal Building Board Insulation:

a. Class I Factory Mutual Approval and UL Fire Hazard Classification Ratings, UL 723:

1. Flame Spread: 25 or less.

2.02 WALL SYSTEM

A. Steel:

1. Aluminum-Zinc Alloy-Coated Steel Sheet: ASTM A792, Class AZ50 coating designation, Grade 40.

2. Gauge: 20

B. CONCEALED FASTENER WALL PANELS

1. Wall Panel Description:

a. Panel Width: 12 inches.

b. Profile: as indicated on drawings.

c. Profile: as indicated on drawings

d. Panel thickness: 7/8 thick.

e. Panel joint: Tongue and groove interlock joint.

f. Texture: Smooth

B. INSULATION

1. Glass-Fiber Board Insulation: ASTM C612, Type IA, unfaced semi rigid insulation. Nominal density of 3 pounds per cubic foot. Size as required for liner panels.

C. ACCESSORIES

1. Wall panel accessories: Provide accessories as required for a complete installation. Accessories shall be as indicated on approved shop drawings and per manufacturer's approved standard details. Match material and finish of metal wall panels.

2. Closure Strips:

    a. Closed Cell Closure Strips: Provide minimum 1 inch thick matching metal wall panel profile.

    b. Metal Profile Closure Strips: Shall be fabricated from same gauge, material and finish as metal panel.

3. Concealed Clips: 18 gauge; Zinc-Coated (Galvanized) Steel Sheet: ASTM A653, G90 coating designation

4. Trim:

    a. Fabricate trim from same material and material thickness as wall panels. Finish to match metal wall panels.

    b. Locations include, but are not limited to the following: Drips, sills, jambs, corners, framed openings, parapet caps, reveals and fillers.

    c. Trim shall be provided under Section 07620 - Sheet Metal Flashing and Trim

5. Metal Framing:

    a. General: ASTM C645, cold-formed metallic-coated steel sheet, ASTM A653, G40 hot-dip galvanized.

6. Panel Sealant:

    a. Joint Sealant: ASTM C920 as recommended in writing by metal wall panel manufacturer.

    b. Butyl-Rubber-Based, Solvent-Release Sealant: ASTM C1311.

7. Fasteners: Self-tapping screws, bolts, nuts, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads.

D. FABRICATION

1. Metal wall panels and liner panels shall be formed to lap and interconnect with edges of adjacent panels which are then mechanically attached through panel to supports using concealed fasteners.

2. Fabricate metal wall panels to eliminate condensation on interior side of panel and with joints between panels designed to form weathertight seals.

3. Metal wall panels shall have site applied sealant at panel joints to provide a tight seal and minimize noise from movements within panel assembly.

4. Panels shall be factory formed. Field formed panels are not acceptable.

5. Curved wall panels: Panels shall be factory curved as approved by manufacturer.

6. Trim Accessories: Fabricate steel trim accessories to comply with recommendations outlined in SMACNA's "Architectural Sheet Metal Manual".

7. Mitered Corners: Structurally bonded horizontal outside or inside trimless corners matching metal wall panel material, profile and factory applied finish shall be fabricated by metal wall panel manufacturer.

8. Welded, riveted or field fabricated corners do not meet the requirements of this specification.

2.03 FINISHES

A. Steel
1. Finish and Color:

a. Color: Custom color as selected by Architect

b. Exposed Aluminum-Zinc Alloy-Coating; ASTM A792, Class AZ50 coating. "Galvalume" protective coating.

c. Finish System:

1) 2.4 mil. Fluropolymer (PVDF) Three Coat system: 0.8 mil primer with 0.8 mil Kynar 500 (70%) SOLID color coat and 0.8 mil clear coat.

2.04 MATERIALS - TRIM

A. Flashings, Internal and External Corners, Closure Pieces, Fascia, Infills, and Caps: Same material and finish as adjacent material, profile to suit system and formed as detailed.

B. Sheet Metal Flashing and Trim: Requirements for sheet metal flashing and trim are indicated in Section 07620 – SHEET METAL FLASHING AND TRIM.

2.05 DOORS AND FRAMES

A. Door and frame shall be designed by the manufacturer to meet the wind load provisions as specified in Section 1.05A. Door shall be designed using beam action to transfer loads from jamb to jamb.

B. Door and Frame as specified under Section 08100 – STEEL DOORS AND FRAMES.

C. Door Frame Support: Building system manufacturer's standard.

2.06 FABRICATION - PRIMARY FRAMING

A. Framing Members: Clean in accordance with SSPC-SP2, prepare, and shop primed.

B. Hot rolled members shall be fabricated in accordance with AISC Specification for pipe, tube, and rolled structural shapes.

C. Fabricate built-up members in accordance with MBMA Low Rise Building Systems Manual, Common Industry Practices.

D. Rigid frame columns shall be no deeper than 18" at the base. End wall columns shall be no deeper than 14" at the base and be of uniform section.

2.07 FABRICATION - WALL AND ROOF FRAMING

A. Framing Members: Clean in accordance with SSPC-SP2, prepare, and galvanize to ASTM A123, Class B.

B. Cold Formed Members: Cold formed structural shapes shall be fabricated in accordance with MBMA Low Rise Building Systems Manual, Common Industry Practices. Cold formed members shall be galvanized.

2.08 ACCESSORIES

A. Wall Louvers: Standards of storm resistant wall louvers shall be similar to those specified in Section 10200 – LOUVERS AND VENTS

B. Provide framing for door and louver openings.

C. Curbs for skylights, ventilators, etc. shall be compatible with steel roof panel and sealed against water penetration in accordance with building manufacturer's instructions.

2.09 SHOP PRIMING FOR FRAMING MEMBERS

A. Shop Primer and Touch-up Primer: Self-curing inorganic zinc primer

B. Cold Galvanizing Compound for field touch-up: Compatible with galvanizing.

C. Abrasives

1. Structural Steel – Abrasives shall be clean dry mineral sand, steel grit, mineral grit or manufactured grit and shall have a gradation such that the abrasive will provide a uniform profile.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify site conditions under provisions of Division 1.

B. Verify that foundation, floor slab, mechanical and electrical utilities, and placed anchors are in correct position.

C. Provide access to the work as scheduled for owner provided inspections, if required. The cost of any required inspections is the responsibility of the owner.

D. Upon delivery, the structural framing materials shall be washed and protected from the elements by storing them in a sheltered area or using protective covers. Store materials to permit easy access for inspection and identification. Keep steel members off ground, using pallets, platforms, or other supports. Protect steel members and packaged materials from corrosion and deterioration.

E. Do not store materials on structure in a manner that might cause distortion or damage to members or supporting structures. Repair or replace damaged materials or structures as directed.

F. Treat all rust and surface imperfections prior to installation.

3.02 CLEANING AND SHOP PRIMING

A. Surface Preparation: Clean surfaces to be painted. Remove loose rust, loose mill scale, and spatter, slag, or flux deposits. Prepare surfaces according to SSPC specifications as follows:

1. SSPC-SP 2 "Hand Tool Cleaning."

2. SSPC-SP 3 "Power Tool Cleaning."

3. SSPC-SP 5 "White Metal Blast Cleaning."

4. SSPC-SP 6 "Commercial Blast Cleaning."

5. SSPC-SP 7 "Brush-Off Blast Cleaning."

6. SSPC-SP 8 "Pickling."

7. SSPC-SP 10 "Near-White Blast Cleaning."

8. SSPC-SP 11 "Power Tool Cleaning to Bare Metal."

B. Priming: Immediately after surface preparation, apply primer according to manufacturer's instructions and at rate recommended by SSPC to provide a dry film thickness of not less than 1.5 mils (0.038 mm). Use priming methods that result in full coverage of joints, corners, edges, and exposed surfaces.

1. Stripe paint corners, crevices, bolts, welds, and sharp edges.

2. Apply 2 coats of shop paint to inaccessible surfaces after assembly or erection. Change color of second coat to distinguish it from first.

C. Painting: Apply a 1-coat, non-asphaltic primer complying with SSPC's "Painting System Guide No. 7" to provide a dry film thickness of not less than 1.5 mils (0.038 mm). In addition, apply finish painting system as specified under Section 09901 – PAINTING except for area to receive fireproofing.

3.03 FIELD TOUCH-UP

A. Remove weld splatters, loose weld slag and other deleterious material with wire brush and other methods. Apply paint conforming to ASTM A 780 to welded and abraded galvanized areas, in conformance with manufacturer's instructions.

B. Abraded, burned or otherwise damaged shop coats shall be touched and/or refinished with the applicable shop coating noted above. After installation, paint connections and other areas where shop coat was omitted.

C. Paint shall be applied with a hand brush, thoroughly worked into all joints, corners and open spaces and well brushed over the surfaces. The paint shall not be applied to wet or damp surfaces and shall be dry when the material is loaded for delivery to the work.

D. Abraded, burned or otherwise damaged shop coats shall be touched and/or refinished with the applicable shop coating noted above. After installation, paint connections and other areas where shop coat was omitted.

E. Paint shall be applied with a hand brush, thoroughly worked into all joints, corners and open spaces and well brushed over the surfaces. The paint shall not be applied to wet or damp surfaces and shall be dry when the material is loaded for delivery to the work.

3.04 CORROSION PROTECTION

A. Where metals are incompatible to other materials, the contact areas of these materials shall be back coated before erection with an approved bituminous paint or other insulation coating as recommended by the fabricator.

B. After erection, all work shall be adequately protected against damage from grindings, polishing, cement or other harmful materials.

3.05 ERECTION - FRAMING

A. Erect framing in accordance with MBMA Low Rise Building Systems Manual, Common Industry Practices.

B. The erector shall furnish temporary guys and bracing where needed for squaring, plumbing, and securing the structural framing against loads, such as wind loads acting on the exposed framing and seismic forces, as well as loads due to erection equipment and erection operation, but not including loads resulting from the performance of work by others. Bracing furnished by the manufacturer for the metal building system cannot be assumed to be adequate during erection. The temporary guys, braces, falseworks and cribbing are the property of the erector, and the erector shall remove them immediately upon completion of erection.

C. Do not field cut or alter structural members without prior written and specific approval of the metal building manufacturer. Approval shall describe the allowable cutting and/or alterations.

D. After erection, prime welds, abrasions, and surfaces not galvanized.

3.06 ERECTION - WALL AND ROOFING SYSTEMS

A. Install in accordance with manufacturer's instructions.

B. Exercise care when cutting prefinished material to ensure cuttings do not remain on finish surface.

C. Fasten cladding system to structural supports, aligned level and plumb.

3.07 ERECTION - GUTTER AND DOWNSPOUT

A. Install gutters and downspouts in strict accordance with manufacturer's instructions.

B. Connect downspouts to drain lines.

3.08 ERECTION – SKYLIGHTS AND VENTILATORS

A. Install in accordance with manufacturer's instructions.

B. Coordinate with installation of roofing system and related flashings.

C. Provide weather tight installation.

3.09 INSTALLATION - ACCESSORIES

A. Install door frame, door, and all other accessories in accordance with manufacturer's instructions.

B. Seal wall and roof accessories weather tight.

3.10 TOLERANCES

A. All work shall be performed in a workmanlike manner.

B. Install Framing in accordance with MBMA Low Rise Building Systems Manual, Common Industry Practices.

END OF SECTION

SECTION 15250 – INSULATION OF MECHANICAL SYSTEMS

PART 1 – GENERAL

1.01 GENERAL CONDITIONS

As specified in Division 0 and Division 1 Specifications.

1.02 GENERAL REQUIREMENTS

A. Section 15000, "General Mechanical Requirements", with the additions and modifications specified herein, applies to this section.

1. Manufacturer's Stamp or Label: Every package or standard container of insulation, jackets, cements, adhesives and coatings delivered to the project site for use must have the manufacturer's stamp or label attached giving name of manufacturer, brand and description of material. Insulation packages and containers shall be marked "asbestos-free".
2. Fire Resistance: Insulation, adhesives, vapor-barrier materials and other accessories, except as specified herein, shall be noncombustible. The materials shall have a flame-spread rating not more than 25 and a smoke-developed rating not more than 50 in accordance with NFPA 255, ASTM E 84-80 or UL 723.

a. Materials Tests: Test factory-applied materials assembled. Field-applied materials may be tested individually. Use no fugitive or corrosive treatments to impart flame resistance. UL label or satisfactory certified test report from an approved testing laboratory will be required to indicate that fire hazard ratings for materials proposed for use do not exceed those specified. Flame-proofing treatments subject to deterioration due to effects of moisture or high humidity are not acceptable.

b. Materials Exempt from Fire-Resistant Rating:

1) Nylon anchors

2) Treated wood inserts

1.03 SUBMITTALS

A. The items for which the submittal requirements of Section 15000, "General Mechanical Requirements", apply are as follows:

1. Manufacturer's Data:

a. Insulation

b. Jackets

2. Standards Compliance: Standards compliance labels are required on each container or package:

a. Insulation

b. Jackets

1.04 DEFINITIONS

A. Finished Spaces: Habitation or occupancy spaces where rough surfaces are plastered, paneled or otherwise treated to provide a pleasing appearance.

B. Unfinished Spaces: Storage or work areas where appearance is not a factor, unexcavated spaces, crawl spaces, etc.

C. Concealed Spaces: Spaces between a ceiling and floor construction above or between double walls or furred-in areas; pipe and duct shafts, etc.

D. Exposed: Open to view inside the building. For example, pipe run through a room and not covered by other construction, is exposed.

E. Fugitive Treatments: Treatment of materials subject to deterioration due to aging, moisture, high humidity, oxygen, ozone and heat. Fugitive means entrapped materials that can cause deterioration e.g., solvents, water vapor, etc.

F. Outside: Open to view beyond the exterior side of walls, above the roof and unexcavated or crawl spaces, above or beneath pier floors, in tunnels or exposed on all sides in trenches connected or not connected to an exterior portion of a building.

1.05 PIPING REQUIRING INSULATION

A. Cold Water Piping

PART 2 - PRODUCTS

1.06 MATERIALS

Asbestos Prohibition: No asbestos containing materials or equipment shall be used under this section. The Contractor shall ensure that all materials and equipment incorporated in this project are asbestos free.

1.07 PIPING INSULATION

Insulation exterior shall be cleanable, grease resistant, non-flaking and non-peeling. Pipe insulation shall conform to the referenced publications and the specified temperature ranges and densities in pounds per cubic foot (pcf). Insulation for fittings and flanges shall be pre-molded, pre-cut or job-fabricated insulation of the same thickness and conductivity as used on adjacent piping.

1. Interior Cold Water Piping: All interior cold water piping shall be insulated with ¾" Rubatex or equal.

1.08 INSULATION JACKETS

Vapor-Barrier Material: Material shall be resistant to flame and moisture penetration and not support mold growth. Provide vapor-barrier material on insulation in exposed

locations with a white surface suitable for painting without sizing. Perm rating of .01.

1.09 ADHESIVES, SEALANTS AND COMPOUNDS

Shall be compatible with materials to which applied and suitable for the service.

PART 3 - EXECUTION

3.01 INSTALLATION

Install insulation system in accordance with manufacturer's recommendations using tradesman skilled in this trade and approved by the insulation manufacturer. Provide insulation products with a composite (insulation, jacket and adhesive) fire and smoke hazard rating as tested under ASTM E84, NFPA 255 and UL 723, not exceeding a flame spread of 25 and smoke developed of 50.

Expansion Clearances: At points where pipe will move during expansion and contraction (expansion joints, Z-bends, expansion loops and ells), clearances between the pipe and encased insulation shall be sized to permit full pipe movement without cracking or damaging insulation and jacket.

3.02 FIELD INSPECTION

Visually inspect to insure that materials used conform with specifications. Inspect installation progressively for compliance with requirements.

END OF SECTION

SECTION 15300 - WET PIPE SPRINKLER SYSTEM

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

A. This Section includes the following:

1. Design and provide new automatic wet pipe fire extinguishing sprinkler system for uniform distribution of water by hydraulic design to afford complete fire protection coverage throughout the building including the attic and overhangs.

2. Obtain and pay for all fees, permits, licenses, assessments and inspections required for this work. Schedule and coordinate required tests and inspections to accomplish the work in conformance with these specifications and drawings.

1.03 APPLICABLE PUBLICATIONS

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by designation only.

A. American Society for Testing and Materials (ASTM) Publications

1. A 53-95 Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless

2. A 795-95 Black and Hot-Dipped Zinc Coated (Galvanized) Welded and Seamless Steel Pipe for Fire Protection Use

3. B 75-81 Seamless Copper Tube 4. B 88-83 Seamless Copper Tube 5. B 251-Wrought Seamless Copper and Copper-Alloy

B. American Water Works (A WW A) Publications:

1. CI04-90 Cement-Mortar Lining for Cast-Iron and Ductile-Iron Pipe and Fitting for Water

2. C151-86 Ductile-Iron Pipe, Centrifugal1y Cast in Metal Molds or Sand-Lined Molds, for Water and Other Liquids 3. C601-86 Disinfecting Water Mains

C. American Welding Society, Inc. (A WS) 1. A 5.8-81 Brazing Filler Metal

D. Copper Development Association Standards (CD A) 1. CDA 1.0 Flux

E. Factory Mutual (FM) Publication 1. Approval Guide, 2006 edition

F. National Fire Protection Association (NFPA) Publications:

1. NFP A 13-2010 Installation of Sprinkler Systems

2. NFPA 25-2000 Inspection, Testing, & Maintenance of Water Based Fire Protection Systems

3. NFPA 70-2002 National Electrical Code

4. NFPA 72-2002 National Fire Alarm Code

G. Underwriters' Laboratories, Inc. (UL) Publications:

1. Fire Protection Equipment Directory, 2006 edition

1.04 PERFORMANCE REQUIREMENTS

A. SCOPE

1. The work includes designing and providing new automatic wet pipe fire extinguishing sprinkler system for uniform distribution of water by hydraulic design to afford complete fire protection coverage throughout the entire building, including concealed spaces and overhangs.

2. Each system shall be provided with earthquake protection and shall include all materials, accessories, and equipment necessary to provide each system complete and ready for use. Design and install each system to give full consideration to blind spaces, piping, electrical equipment, ductwork, and all other construction and equipment to afford complete coverage in accordance with detailed drawings to be submitted for approval. Devices and equipment for fire protection service shall be listed by the Underwriters' Laboratories, Inc. or approved by Factory Mutual System. In the NFPA publications referred to herein, the advisory provisions shall be considered to be mandatory, as though the word "shall" had been substituted for "should" wherever it appears; reference to the "authority having jurisdiction" shall be interpreted to mean the Hawaii Insurance Bureau and the Building and Fire Departments. The work shall begin at the point indicated.

B. QUALIFICATION OF INSTALLER

1. Prior to submission of bid, submit data for approval by the Engineer, showing that the Contractor is a licensed fire protection contractor (C-20) and has successfully installed automatic fire extinguishing sprinkler systems of the same type and design as specified herein, or that it has a firm contractual agreement with a subcontractor having such required licensed experience. The data shall include the names and locations of at least two installations where the Contractor, or the subcontractor referred to above, has installed such systems. The contractor shall indicate the type and design of each system and certify that each system has performed satisfactorily in the manner intended for a period of not less than 18 months.

C. QUALIFICATION OF SYSTEM TECHNICIAN

1. Installation drawings, shop drawing and as-built drawings shall be prepared, by or under the supervision of, an individual who is experienced with the types of works specified herein, and is currently certified by the National Institute for Certification in Engineering Technologies (NICET) as an engineering technician with minimum Level-III certification in the Fire Protection/Automatic Sprinkler System program. Contractor shall submit data for approval showing the name and certification of all involved individuals with such qualifications at or prior to submittal of drawings.

1.05 ELECTRICAL WORK

A. Building fire alarm system connections shall be provided under Fire Alarm System.

1.06 SUBMITTALS

A. Submittals shall be in accordance with Section 01030. Partial submittals will not be acceptable. Submit for approval six (6) complete sets of submittals as described below.Annotate descriptive data to show the specific model, type, and size of each item the Contractor proposes to furnish. Prepare working drawings on sheets not smaller than 24 by 36 inches, in accordance with the requirements for "Working Drawings (Plans) as specified in NFPA 13-2010, and include data essential to the proper installation of each system. Do not commence work until the design of each system and the various components have been approved. The Engineer and the Hawaii County, Building and Fire Departments will review and approve all submittals. Before work is commenced, submit for approval complete sets of working drawings and calculations for each sprinkler system. Working drawings and calculations must be stamped by a Hawaii licensed Mechanical engineer with current registration.

B. Manufacturer's Data:

1. Sprinklers & sprinkler guards
2. Spare sprinkler cabinet and sprinkler stoppers
3. Alarm check valve
4. Alarm pressure and water flow switches
5. Valve tamper switches
6. Pipe, fittings, and mechanical couplings
7. Flux and brazing material
8. Pipe hangers and supports
9. Earthquake sway bracing and seismic restraint
10. Valves including gate, check, relief
11. Fire department connection

C. Shop (Working) Drawings:

1. Sprinkler system layout conforming to NFPA 13-2010.

D. Calculations:

1. Sprinkler system hydraulic calculations conforming to NFPA 13-2010

2. Seismic bracing calculations

E. Samples: One of each type of sprinkler head, sprinkler guard and escutcheon plates to be used.

F. Certificates of Compliance:

1. Contractor's material and test certificate per NFPA 13-2010.
2. Pipe and fittings

G. Operation and Maintenance Manuals:

1. Alarm Check Valve
2. Alarm pressure switch
3. Valve tamper switch

H. Test Plan: A minimum of fifteen (15) days prior to the Preliminary Testing, the contractor shall submit a "Test Plan" which shall describe how the system will be tested. This shall include a step-by-step description of all tests and shall indicate type and location of test apparatus to be employed. Tests shall not be conducted until the test plan is approved by the Engineer.

1. Publications: NFPA 25 - 2002, Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems.

I. As-Built Drawings: Submit in accordance with Division 1

PART 2 - PRODUCTS

2.01 DESIGN OF SPRINKLER SYSTEM

A. Sprinkler System: Design of wet pipe fire extinguishing sprinkler system shall be by hydraulic calculations for uniform distribution of water over the design area and shall conform to NFPA 13-2010 and to the requirements as specified herein.

1. Distribution of Water: Distribution shall be essentially uniform throughout the area in which it is assumed the sprinkler heads will open. Variation in discharge from individual heads in the hydraulically most remote area shall be between 100 and 120 percent of the specified density.

2. Density of Application of Water: Size pipe to provide the specified density when the system is discharging the specified total maximum required flow. Application to horizontal surfaces below the sprinklers shall be as indicated on the drawings.

3. Sprinkler Discharge Area: Area shall be the hydraulically most remote area as defined by NFPA 13-2010. The design area shall be as indicated on the drawings.

4. Hose Allowances: Hydraulic calculations shall include the allowance as indicated on the drawings.

5. Friction Losses: Calculate losses in pipe in accordance with the Hazen-Williams formula with 'C' value of 120 for steel pipe, 140 for buried cement-lined ductile iron pipe and 150 for copper tubing.

6. Location of Sprinkler Heads: Heads in relation to the ceiling and walls and the spacing of sprinklers shall not exceed that permitted by NFPA 13-2010.

7. Water Supply: Base hydraulic calculations on the water supply as indicated on the drawings.

2.02 EQUIPMENT

A. Sprinkler Heads: Release element of each head shall be as indicated on the drawings or higher as suitable for the individual location where it is installed. Provide semi recessed quick response pendent sprinklers below finished ceilings. Provide brass quick response upright sprinkler in areas with no finished ceiling. Provide standard response brass sprinklers in the attic. All exposed sprinklers shall be provided with a heavy duty sprinkler head guard, Brecco, Brooks, Viking or approved equal. Color selection shall be by the architect. Contractor to provide the County with 10 extra sprinkler head guards for location on site.

B. Cabinet: Provide extra sprinkler heads and sprinkler head wrench and three of the proper types of sprinkler stoppers in a metal cabinet adjacent to the sprinkler riser. The number and types of extra sprinkler heads shall be as specified in Hawaii County Fire Code Article 10.306(a).

C. Alarm Check Valve: Provide variable pressure type alarm valve complete with retarding chamber, water motor alarm, alarm test valve, alarm shutoff valve, drain valve, pressure gauges, accessories, and appurtenances for the proper operation of the system.

D. Sprinkler Supervisory Devices Provide as indicated. Connection of the sprinkler supervisory devices to the building fire alarm system shall be provided under Section 16721, "Fire Alarm System".

1. Alarm Pressure Switch: UL listed or FM approved.

2. Valve Tamper Switch: Provide each control valve with a listed or approved tamper switch for the automatic transmittal of a trouble signal. Valve tamper switches which are integral to the control valve will be acceptable.

2.03 ABOVE GROUND PIPING SYSTEMS

A. Inspect, test and approve piping before burying, covering, or concealing. Provide fittings for changes in direction of piping and for all connections. Make changes in piping sizes through reducing pipe fittings; the use of bushings will not be permitted. Welding shall be performed in the shop; field welding will not be permitted.

B. Pipe and Fittings:

1. Provide in accordance with NFPA 13-2010, NFPA 14 and DBC STD 9-1 and 9-2. All exposed piping and fittings and the riser assembly shall be hot dipped galvanized steel. Pipe sizes less than 2.5 inches shall be Schedule 40, all other piping shall be minimum Schedule 10.

2. Fittings into which sprinkler heads, sprinkler head riser nipples, or drop nipples shall be welded, threaded, or grooved-end type. Use of plain-end fittings with mechanical couplings which utilize steel gripping devices to bite into pipe when pressure is applied will not be permitted. "Mechanical T", "Clamp T" or any other bolted branch outlet tees will not be permitted. Rubber gasketed grooved-end pipe and fittings with mechanical couplings shall be permitted in pipe sizes 1.25 inches and larger; fittings shall be UL listed or FM approved for use in sprinkler systems.

3. Provide earthquake sway brace within 24 inches of each flexible coupling which is installed in horizonal piping for purposes other than earthquake protection

C. Pipe Hangers, Supports, and Earthquake Sway Bracing: Provide in accordance NFPA 13-2010. Provide retaining straps on beam clamps. Provide branch line seismic restraint.

D. Valves: Provide valves as required by NFPA 13-2010, and DBC STD 9-1, and of types approved for fire service. Gate valves shall open by counterclockwise rotation. Check valves shall be clear opening swing check type. Provide OS& Y valves as indicated.

E. Relief Valve: Provide an approved relief valve on gridded systems in accordance with NFPA 13-2010.

F. Identification Signs: Attach properly lettered approved metal signs conforming to NFPA 13-2010 to each valve and alarm device. Permanently affix hydraulic design data nameplates to the riser of each system.

G. Inspector's Test Connection: Provide test connections no more than 6 feet above the floor for each sprinkler system or portion of each sprinkler system equipped with an alarm device.

H. Main and Auxiliary Drains: Provide drain piping to discharge at safe points outside each building or to sight cones attached to drains of adequate size to readily receive the full flow from each drain under maximum pressure. Provide auxiliary drains required by NFPA 13-2010.

I. Pipe Sleeves: Provide where piping passes through walls, floors, roofs, and partitions. Secure sleeves in proper position and location. Provide sleeves of sufficient length to pass through entire thickness of walls, floors, roofs, and partitions. Provide not less than 1-inch space between exterior of piping or pipe insulation and interior of sleeve.Firmly pack space with an approved firestopping material.

1. Sleeves in Masonry and Concrete ,Walls, Floors and Roofs: Provide ASTM A 53, Schedule 40 or Standard Weight, zinc-coated steel pipe sleeves. Extend sleeves in floor slabs 3 inches above the finished floor.

2. Sleeves in Partitions and Other Than Masonry and Concrete Walls, Floors, and Roofs: Provide zinc-coated steel having weight of not less than 0.90 pounds per square foot.

J. Escutcheon Plates: Provide one piece or split hinge type metal plates for piping passing through floors, walls, and ceilings in exposed areas. Provide chromium-plated finish on plates; in finished areas. Provide paint finish on plates in unfinished areas. Securely anchor plates in place with setscrews or other approved positive means.

K. Fire Department Connection: Provide connection approximately 3 feet above finish grade, of the approved polished brass two-way type with 2.5-inch National Standard female hose threads with plug and chain. The function of the connection shall be clearly indicated as AUTO SPRINKLER and the building it is serving. Fire department connections shall be located as indicated on the drawings.

2.04 BURIED WATER PIPING SYSTEMS:

Pipe and Fittings: Provide outside-coated, cement mortar lined, ductile-iron pipe and fittings conforming to NFPA 24 for piping under the building and less than 5 feet outside of the building walls. Anchor the joints in accordance with NFPA 24; provide concrete thrust block at the elbow where the pipe turns up toward the floor, and restrain the pipe riser with steel rods from the elbow to the flange above the floor. Minimum pipe size shall be 6 inches. Minimum depth of cover shall be 3 feet.

2.05 ELECTRICAL WORK:

Electrical work is specified in "Electrical Work," except for control and fire alarm wiring in this section.

PART 3 – EXECUTION

3.01 INSTALLATION

A. Equipment, material, installation, and workmanship: Provide in accordance with NFPA 13-2010, and UBC STD 9-1, except as modified herein. Install piping straight and true to bear evenly on hangers. Keep the interior of new and existing piping affected by the Contractor's operations thoroughly cleaned of water and foreign matter. Keep piping systems clean during installation by means of plugs or other approved methods. When work is not in progress, securely close open ends of piping and fittings so that water and foreign matter will not enter the pipes or fittings. Inspect piping before placing into position. Inspect, test, and approve piping before burying, covering, or concealing. Provide fittings for changes in direction of piping and for all connections. Make changes in piping sizes through tapered reducing pipe fittings; do not use bushings.

B. Pipe Hangers (Supports): Provide additional hangers to support the concentrated loads in piping between hangers, such as for flanged valves.

3.02 DISINFECTION

A. Disinfect the new water piping and existing water piping affected by Contractor's operations in accordance with AWWA C601. Fill the piping systems with solution containing minimum of 50 parts per million of available chlorine and allow solution to stand for minimum of 24 hours. Flush the solution from the systems with clean water until maximum residual chlorine content is not greater than 0.3 parts per million. Submit a certificate of completion for this work from a contractor experienced and licensed to do disinfecting work.

B. Obtain two water samples and submit them to a licensed laboratory for bacteriological testing. Water shall meet Federal water purity standards. Submit the laboratory report or a certification of satisfactory completion of disinfection. All costs of testing shall be borne by the contractor.

3.03 ELECTRICAL INSTALLATION

Comply with local ordinances and regulations of the Hawaii County as well as NFPA 70, and NFPA 72. Workmanship is subject to the approval of the Engineer.

3.04 FIELD PAINTING

A. Painting: Clean, pretreat, prime, and paint new sprinkler systems including valves, piping, conduit, hangers, miscellaneous metalwork, and accessories. Apply coatings to clean dry surfaces using clean brushes. Clean the surfaces to remove dust, dirt, rust and loose mill scale. Immediately after cleaning, provide the metal surfaces with one coat of pretreatment primer applied to a minimum dry film thickness of 0.3 mil, and one coat of primer applied to a minimum dry film thickness of one mil. Exercise care to avoid painting of sprinkler heads or protective devices. Remove materials which are used to protect sprinkler heads, while painting is in process, upon the completion of painting. Remove sprinkler heads which are painted and provide new clean sprinkler heads of the proper type. Provide primed surfaces with the following:

B. Sprinkler Systems in Unfinished Areas: Unfinished areas are defined as attic spaces, spaces above suspended ceilings, crawl spaces, pipe chases, and spaces where walls or ceiling are not painted or not constructed of prefinished material. Provide primed surfaces with one coat of red enamel applied to a minimum dry film thickness of one mil.

C. Sprinkler Systems in All Other Areas: Provide primed surfaces with two coats of paint to match adjacent surfaces, except provide valves and operating accessories with one coat of red enamel. All piping shall be hot dipped galvanized.

3.05 FIELD TESTING AND FLUSHING

A. Preliminary Tests:

1. Perform an air pressure leakage test for all sprinkler piping per NFPA 13-2010, Paragraph 8-2.3, prior to hydrostatic testing. Hydrostatically test the sprinkler system at 200 psig or at 50 psi in excess of maximum pressure when the maximum will be in excess of 150 psi, for a period of two hours. Piping above suspended ceilings shall be tested, inspected and approved before installation of ceilings.

2. Flush sprinkler piping in accordance with NFPA 13-2010. Continue flushing operations until water is clear, but for not less than 10 minutes.

3. Test the alarms and other devices. Test the water flow alarms by flowing water through the inspector's test connection.

4. When tests have been made completed and corrections made, submit a signed and dated certificate, similar to that specified in NFPA 13-2010, with a request for a formal inspection and tests.

B. Formal Inspection and Tests: The Hawaii County Building and Fire Departments and State of Hawaii Boiler and Elevator Inspection Bureau will witness formal tests and approve all systems before they are accepted. Submit the request for formal inspection at least 15 days prior to the date the formal inspection is to take place. An experienced technician regularly employed by the sprinkler installer shall be present during the inspection. At this inspection, repeat any or all of the required tests as directed. Correct defects in the work provided by the Contractor, and make additional tests until it has been demonstrated that the systems comply with all contract requirements and applicable codes. Furnish appliances, equipment, electricity, instruments, connecting devices, and personnel for the tests. All necessary tests encompassing all aspects of system operation shall be made, any deficiency found shall be corrected and the system retested at no cost to the County.

3.06 INSTRUCTING OPERATING PERSONNEL

Upon completion of the work and at a time designated by the County, provide for a period of not less than 4 hours the services of experienced technicians regularly employed by the manufacturer of the sprinkler system to instruct the operating staff in the proper operation and maintenance of the equipment.

3.07 INSPECTION, MAINTENANCE, AND TESTING SERVICE AGREEMENT

The contractor shall include one year inspection, maintenance, and testing service agreement in the bid. The one year period shall begin at the date of acceptance. The agreement shall cover all labor, parts, insurance taxes, fees, and other incidental costs to inspect and test the system in accordance with NFPA 25 and the Hawaii County Fire Code. Inspection and testing of the system shall be conducted on a quarterly basis for a total, of four (4) visits during the one year period.

END OF SECTION

SECTION 15400 - PLUMBING SYSTEM: BASIC MATERIALS AND METHODS

PART 1 - GENERAL

1.01 GENERAL CONDITIONS

Section 15000 "General Mechanical Requirements," applies to this section with the additions and modifications specified herein.

1.02 WORK SPECIFIED IN THIS SECTION

All materials, labor and equipment necessary for complete and operating interior plumbing system within 5 feet of the building line, including complete sanitary and potable water piping.

1.03 STANDARDS AND CODES

A. Installation shall conform to all applicable provisions of the latest editions of the following, as well as to specific standards listed elsewhere in these Specifications:

1. Uniform Plumbing, 2006 Code with The County of Hawaii Amendments.
2. State of Hawaii, Title 11 Administrative Rules, Department of Health.
3. American Society for Testing and Materials (ASTM):

A74-92	Cast Iron Soil Pipe and Fittings
A53-90	(Rev. B) pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless
B88-92	Seamless Copper Water Tube

4. American National Standards Institute (ANSI):

B16.18-84	Cast Bronze Solder Joint Pressure Fittings
B16.23-92	Cast Copper Alloy Solder Joint Drainage Fittings - DWV
Z21.22-86	(Addendum 1990) Relief Valves and Automatic Gas Shutoff Devises for Hot Water Supply Systems

1.04 REQUIRED SUBMITTALS

A. As indicated in Section 15000, General Mechanical Requirements.

B. Certificate of compliance by the test laboratory analyzing the water samples following the pipeline disinfection and flushing.

C. Guarantee: Provide written guarantee for all plumbing work as described in Section 15000.

D. Record Drawings: Provide "as-built" record drawings for all plumbing work as described in Section 15000.

PART 2 - PRODUCTS

2.01 SUBSTITUTIONS

Substitutions for products specified with equivalent models shall be submitted for approval in accordance with Section 15000 of these Specifications.

2.02 PIPING MATERIALS

A. Soil Waste, and Vent Pipe:

1. Underground Soil, Waste and Vent Pipes: Service weight hub and spigot or hubless cast iron pipe and fittings conforming to ANSI A-112.5.1. Joints shall be made with compression neoprene gaskets conforming to ASTM C-564, or with Code-approved cast iron hubless couplings, Husky or equal.

2. Aboveground Vents: 2-inches or larger shall be service weight hubless cast iron pipe and fittings, conforming to Cast Iron Soil Pipe Institute (CISPI) Standard 301-72. Joints shall be made with neoprene gaskets and stainless steel clamp assemblies conforming to CISPI 310, Husky or equal. Vents smaller than 2 inches shall be standard weight galvanized steel pipe with galvanized malleable iron screwed fittings.

3. Aboveground Waste Pipe: 2-inches or larger shall be similar to above ground 2-inches or larger vents. Waste lines smaller than 2-inches shall be standard weight galvanized steel with cast iron drainage patterned fittings.

B. Potable Water:

1. Water Lines Above Grade: Copper Type L, hard temper, with wrought copper or cast bronze fittings made up with 95-5 solder.

2. Water Lines Below Grade: Copper Type K, soft temper, with silver-solder brazed joints.

2.03 VALVES

A. General: Model and number listed in these specifications are the basis for type and quality. Pressure ratings indicated are "working steam pressure" (WSP).

B. Ball Valves: Nibco S-FP-600 brass ball valves or approved equal.

C. Pressure Reducing Valve: Pressure reducing valves shall be Watts Series U5B or equal.

D. Hose Bibs: Arrow or equal, provide with vacuum breaker and loose key. Provide snubber at each hose bib.

2.04 UNIONS

A. Copper: bronze body, 200 psig. For pipes 2" and smaller use ground joint, for pipes

2-1/2" and larger use flanged face.

B. Dielectric Unions shall separate all ferrous and nonferrous metals in all piping systems. Unions shall match those above, except that of metal-to-metal contact shall be avoided. Where flanges are used, the bolts shall be electrically insulated from the body of the flange.

2.05 AIR CHAMBERS

Air chambers shall be 12" long copper tubing, the same size as branch pipe to fixture. Pipe shall be capped, crimping is not allowed.

2.06 TRAP PRIMERS

Smith Fig. 2699 Trap Primer, provide with minimum 8” x 8” access door.

2.07 ROUGH-IN PIPING SPECIALTIES

Floor Cleanouts (FCO): Smith Fig. 4028 Duco cast iron body, round top, bronze plug, taper thread, inside caulk outlet.

Wall Cleanouts (WCO): Smith Fig. 4434 Duco Cast Iron Caulk Ferruel with Cast Bronze Taper Threaded Plug, Chrome Plated Bronze Square Frame and Secured Cover.

Floor Drains (FD): Smith Fig 2010-P050 Duco cast iron body, round top, Nickel Bronze adjustable strainer head. Trap primer connection.

2.08 ESCUTCHEONS

Brass body, chrome-plated finish. Of sizes sufficient to cover pipe openings through the floor, wall or ceiling. Escutcheons shall be secured in place by either spring clips or setscrews.

2.09 PIPE SLEEVES

Schedule 40 galvanized steel pipe sleeves in concrete, 18 gauge galvanized sheet metal sleeves in other construction. Sleeves shall be sized to provide a minimum of 1/4" clearance around bare or insulated piping or as otherwise required by Code.

2.10 PIPE HANGERS AND SUPPORTS

A. General: Elcen, Fee and Mason, Globe, Grinnell, Superstrut, and Unistrut are approved. Fee and Mason figure numbers indicate type and quality. Provide concrete insert at all pre-stressed planks for pipe and equipment installation and coordinate with pre-stressed plank contractor.

B. For Uninsulated Copper Tubing: Fee and Mason No. 307, 364, or 365.

C. For Insulated Copper Tubing: Fee and Mason No. 800.

D. Riser Clamps: Black steel, Fee and Mason No. 241. Copper coated, Fee and

Mason No. 368.

E. Hanger Spacing:

Pipe	Maximum Spacing
Copper tubing, 1-1/2" and smaller	6 feet
Copper tubing, 2" and larger	10 feet
Cast iron soil pipe	At each joint and at intervals not to exceed 8 feet.

F. Hanger Rods: Continuous-threaded rod conforming to ASTM A-107. Eye rods shall be Fee and Mason Figure No. 228 and 228 WL. Sizes shall be as follows:

Pipe Size	Rod Size
½" to 2"	3/8"
2-1/2" to 3"	1/2"
4" to 6"	5/8"

G. ACCESS DOORS

1. Non fire rated:

Provide Elmdor SLK Series, Shur-Lok Access Doors (SLK-SS). Access door and Frame shall be fabricated from 14 gage, galvannealed steel with a prime coat finish. Door shall have a 16 gage vertical reinforcement channel, a concealed hinge, and an automatic locking, springbolt lock. Finish shall be a stainless steel.

2. Fire rated:

Provide Elmdor FR Series, Fire Rated Access Doors (FR-SS). Access door and frame shall be fabricated from 16 gage, galvannealed steel with a prime coat finish. Hinge shall be concealed type. Door shall have a heavy duty spring to provide positive latching when closed, and an interior latch release slide enabling door to be opened from the inside. Exterior latch shall be recessed and operated using ring attached to the sliding bolt. Finish shall be a stainless steel.

2.11 PLUMBING FIXTURES AND TRIM

Section 15450 PLUMBING FIXTURES AND TRIM.

PART 3 - EXECUTION

3.01 WORKMANSHIP AND COORDINATION

A. All work shall be of the highest standard. Poor workmanship will be rejected by the Engineer and shall be replaced at no additional cost to the Owner.

B. Coordinate this work with schedules of other trades, specifically sanitary and water

lines below concrete slabs or concealed in walls. Set all required inserts and sleeves.

C. Lay out piping to insure a neat and orderly arrangement, with vertical lines plumb.

D. Carefully handle all exposed piping to avoid tool marking. Handle polished fittings with extra care so tool marks do not show.

3.02 PIPING INSTALLATION

A. Roughing-In:

1. Proceed with the rough-in work as rapidly as general construction will permit and have all of the roughing-in stubbed out and tested before any finished work are in place.

2. Fit all piping to follow the building structural elements as closely as possible.

B. General Installation Guidelines:

Inspect all pipes fully inside and out for defects. Ream out ends of pipe and remove all burrs. Water lines shall be protected during construction to prevent contamination of interior surfaces.

C. Do not close up before pipe inspection and approval by the Engineer.

D. Provide pipe sleeves where pipes pass through concrete masonry below grade. Fill annular space within sleeves with 3-hour rated, UL approved fire proof caulking. Flash around base of pipes penetrating the roof. Penetrations shall not leak even under the heaviest rainfall conditions.

E. Slope sanitary piping not less than 1/4" per foot of horizontal, unless otherwise indicated on drawings. Grade vent pipes to expel water.

F. Protect copper tubing from coming in contact with dissimilar metal with dielectric union. Wrap underground copper lines with three layers of plastic tape.

G. Underground water lines below pavement shall have sand cushion and minimum 12-inch cover.

H. All piping shall be properly and safely supported. Support soil stacks at their bases and at each floor with metal clamps.

Horizontal pipes above grade shall be supported with hangers not more than 18 inches from every joint.

I. Install unions at all equipment and system specialties, whether specifically shown on the drawings or not.

J. Apply pipe insulation in accordance with of the National Insulation Contractors Association (NICA). Insulate all fittings and valve bodies, and cover to match straight

pipe sections, or use pre-formed PVC insulation covers. All hot water lines shall be insulated per Section 15250. All cold water lines shall be insulated per Section 15250

3.03 EQUIPMENT SUBSTITUTIONS APPROVAL

Do not commence with installation until proposed equipment substitution submittals are approved.

3.04 FIXTURE INSTALLATION

A. Set all plumbing fixtures in an approved workmanlike manner. Point up edges against wall with approved caulking.

B. Flanges at wall penetrations shall be flush against wall and shall not spin when rotated by hand.

C. Adjust equipment and plumbing fixtures and trim to operate properly and clean all fixtures just prior to final inspection.

3.05 DISINFECTION OF WATER LINES

A. Flush out water lines to remove foreign matter. After flush water runs clear, disinfect the lines with chlorine in accordance with AWWA Standard C601, pertaining to methods, concentrations, and contact times. Flush out until residual is reduced to 0.3 ppm. Submit a certificate of completion for this work from a contractor experienced and licensed to do disinfecting work.

B. Obtain two water samples from selected points and submit them to a licensed laboratory for bacteriological testing. Water shall meet Federal water purity standards. Submit the laboratory report or a certification of satisfactory completion of disinfection. All costs of testing shall be borne by the Contractor.

3.06 TEST AND ACCEPTANCE INSPECTIONS

A. Test all new plumbing lines in accordance with methods described in Section 318 of the Plumbing Code. Repair all leaks and repeat the test until all lines are leak-free.

B. Contractor shall arrange for inspections by the Owner and conduct required tests in the presence of the Engineer and inspectors for the County.

C. Tests shall be repeated as necessary to satisfy the Engineer, or such tests shall be made by the Owner and charged to the Contractor.

END OF SECTION

SECTION 15450 - PLUMBING FIXTURES AND TRIM

PART 1 - GENERAL

1.01 GENERAL CONDITIONS

Section 15000 "General Mechanical Requirements," applies to this section with the additions and modifications specified herein.

1.02 WORK SPECIFIED IN THIS SECTION

All material, labor and equipment necessary for complete and operating interior plumbing fixtures and trim.

1.03 WORK SPECIFIED IN OTHER SECTIONS

Rough-In Piping: Section 15400, PLUMBING SYSTEM: BASIC MATERIALS AND METHODS.

1.04 SUBSTITUTIONS

Substitutions for products specified with equivalent models listed in the Plumbing "Blue Book" Index Creations Cross Reference need not pre-qualify. Other substitutions submit for approval in accordance with the Revised General Conditions and the Special Provisions of these Specifications.

1.05 SUBMITTALS

Submit under provisions of Section 15000 - GENERAL MECHANICAL REQUIREMENTS.

PART 2 - PRODUCTS

2.01 DOMESTIC PLUMBING FIXTURES AND TRIM

Substitutions for products specified with equivalent models shall be listed in the plumbing "Blue Book" index creations cross reference need not be pre-qualify. Other substitutions submit for approval in accordance with Section 15000 of these specification.

A. Water Closet - Accessible (WC-1)

Includes K-13517-CP flushometer, K-4325-0 Kingston toilet bowl, and K-4731-C-0 Stronghold seat. Reliable piston valve technology. 1.28 gallons per flush (gpf).Chloramine resistance on all rubber components exposed to waterway. Includes vacuum breaker and control stop. Locking stop cap and non-hold open design provide protection against vandalism. Optimized bowl and fully glazed 2-1/8-inch trapway provides both superior bulk and light waste performance.1-1/2-inch top spud. Elongated open-front seat with integrated handle. Check hinge stops the seat from leaning back and applying pressure on flushometer.

Smith Fig. 0230-4 adjustable Fixture Support for Siphon Jet Water Closets. Vertical Fittings. Single outlet. 8” wall width.

Fixtures and installation shall conform to ADAAG Section 604 Water Closets and Toilet Compartments.

B. Water Closet (WC-2)

Includes K-13517-CP flushometer, K-4325-0 Kingston toilet bowl, and K-4731-C-0 Stronghold seat. Reliable piston valve technology. 1.28 gallons per flush (gpf). Chloramine resistance on all rubber components exposed to waterway. Includes vacuum breaker and control stop. Locking stop cap and non-hold open design provide protection against vandalism. Optimized bowl and fully glazed 2-1/8-inch trapway provides both superior bulk and light waste performance.1-1/2-inch top spud. Elongated open-front seat with integrated handle. Check hinge stops the seat from leaning back and applying pressure on flushometer.

Smith Fig. 0230-4 adjustable Fixture Support for Siphon Jet Water Closets. Vertical Fittings. Single outlet. 8” wall width.

C. Lavatory (L-1)

Kohler K-2007 Kingston Wall Mounted Lavatory, vitreous china, single hole drilling, drilled for concealed arm carrier.

Symmons S-71 G single post metering faucet with grid strainer.

Kohler K-8999 P-Trap with 1-1/4" inlet and 1-1/2" outlet with slip joint and cleanout plug.

J.R. Smith Series 700 floor mounted lavatory carrier.

Brass Craft SCR 3912-A loose key angle stop with riser.

Brass Craft 649SS stainless steel escutcheon.

Truebro Lav Guard ADA conforming, wheelchair accessible lavatory under sink protective pipe cover.

Fixtures and installation shall conform to ADAAG Section 606 Lavatories and Sinks.

D. Lavatory (L-2)

Kohler K-2007 Kingston Wall Mounted Lavatory, vitreous china, single hole Drilling, drilled for concealed arm carrier.

Symmons S-71 G single post metering faucet with grid strainer.

Kohler K-8999 P-Trap with 1-1/4" inlet and 1-1/2" outlet with slip joint and cleanout plug.

J.R. Smith Series 700 floor mounted lavatory carrier.

Brass Craft SCR 3912-A loose key angle stop with riser.

Brass Craft 649SS stainless steel escutcheon.

E. Urinal (UR-1)

Kohler K-5016-ET Dexter Wall Mounted Urinal, vitreous china, 3/4" top spud, 1 gallon per flush.

Sloan Royal Model 186-1.0 flushometer, 3/4" adjustable tail-piece, 3/4" I.P.S. screwdriver Bak-Check angle stop and ADA lever handle.

Fixtures and installation shall conform to ADAAG Section 605 Urinals.

F. Urinal (UR-2)

Kohler K-5016-ET Dexter Wall Mounted Urinal, vitreous china, 3/4" top spud, 1 gallon per flush.

Sloan Royal Model 186-1.0 flushometer, 3/4" adjustable tail-piece, 3/4" I.P.S. screwdriver Bak-Check angle stop and ADA lever handle.

G. Sink (S-1)

Elkay Model WNSF8360LR #14 gauge, type 304, (18-8) stainless steel scullery sink. Compartments 14" deep. Welded 1/4" radius coved corner construction.
Welds are ground to a smooth and cleanable finish. Full length 8" high backsplash with 45° sloped top. 1-1/2" wide inward sloping top channel rims. Integral drainboards, sink compartments pitched to drain. Exposed surfaces polished to a satin finish. Weldbilt sinks carry the NSF International Certification.
Sinks supported on (4) LK251 stainless steel, 1-5/8" O.D. tubular legs, #16 gauge wall thickness. Adjustable bullet shaped feet adjustable up to 1". 4 hole punching.

Elkay Model LK940HA10t4H Wall Mount 8” center Commercial Faucet. Two hole dual handle wall mount faucet. Quarter turn ceramic disc cartridge, 1/2" adjustable inlets Solid brass construction, Chrome finish, 2.2 GPM VR aerator with 1.5 GPM inserts, Includes spout swing restriction pin. 4" wrist blades handles

Elkay Model LKAD-35 basket strainer

Dearborn No. 109-20-1 1-1/2” x 24” Center to Center Slip Joint End Out Waste- 20 Gauge.

Dearborn No. 704-GBN P-Trap.

Brass Craft SCR3912-A loose key angle stop and riser.

H. Mop Sink (M.S.)

Kohler K-6710 Whitby Service Sink. The floor-mount corner service sink shall be 28″ in length and 28″ in width. Sink shall be made of cast iron with acid resistant enamel finish.

Sink shall have a coated wire rim guard (K-8940).

Kohler K-8928 Two-handle service sink faucet shall be of brass construction. Faucet shall feature brass valve bodies. Faucet shall also feature Valvet valves. Product shall include 8” centers, 3” threaded spout for hose connection, 7” wall-to-spout outlet, lever handles, vacuum breaker, loose key stops, rubber hose, wall hook, and internal NPT connections.

Kohler K-9142 Service sink strainer tapped for 2” NPT caulk connection.

I. LAUNDRY TUB (L.T.)

Fiat Model FL-1 Molded Stone floor mounted laundry tub. The unit shall have 13” walls. Capacity shall be 17 gallons for a single tub sink.

Delta Model No. 2131Exposed deck mount 4” center specialty laundry faucet with two hole dual handle top, 5-5/8" long, 6-1/2” high spout swings 360 degrees, and 4” wrist blade handles.

ProFlo Model No. PFPTP101 P-Trap with 1-1/4" inlet and 1-1/2" outlet with slip joint and cleanout plug.

BrassCraft Model No. KTCR19C ¼” turn ball valve, ½” nom. Comp. x 3/8” OD comp..

ProFlo Model No. PF146324 S.S. braided flexible connections.

ProFlo Model No. PFE11 1-1/2” iron pipe (chrome plated) escutcheons.

ProFlo Model No. PFE7 5/8” OD copper escutcheons. The unit shall include water supply lines, stopper, tail piece washer and p-trap.

J. Drinking Fountain (D.F.)

Elkay Model LK4420 Bi-level, tubular Pedestal Barrier Free Drinking Fountain. Finish: textured powder coat finish and E-Coat immersion Bubbler: Vandal-resistant, bubblers are one-piece, chrome-plated with integral hood guard design to prevent contamination from other users, airborne deposits and tampering. Pushbutton Actuation Mechanism: Self-closing, vandal-resistant pushbuttons do not require grasping or twisting. Automatic Stream Height Regulator: Self-closing assembly is located inside unit to prevent tampering. Unit resists corrosion and liming. A constant stream height is automatically maintained under line pressures that vary from 20 to 105 psi. Inlet Strainer: Easily cleaned in-line strainer screen traps particles of 140 microns or larger before they enter the waterway. Water Inlet: 3/8" O.D. tubing. Drain Outlet: 1-1/4" tube outlet for 1-1/4" slip joint connection. Access Panel: Manufactured of heavy-gauge steel with vandal-resistant screws.

PART 3 - EXECUTION

3.01 EQUIPMENT SUBSTITUTIONS APPROVAL

Do not commence with installation until proposed equipment substitution submittals are approved.

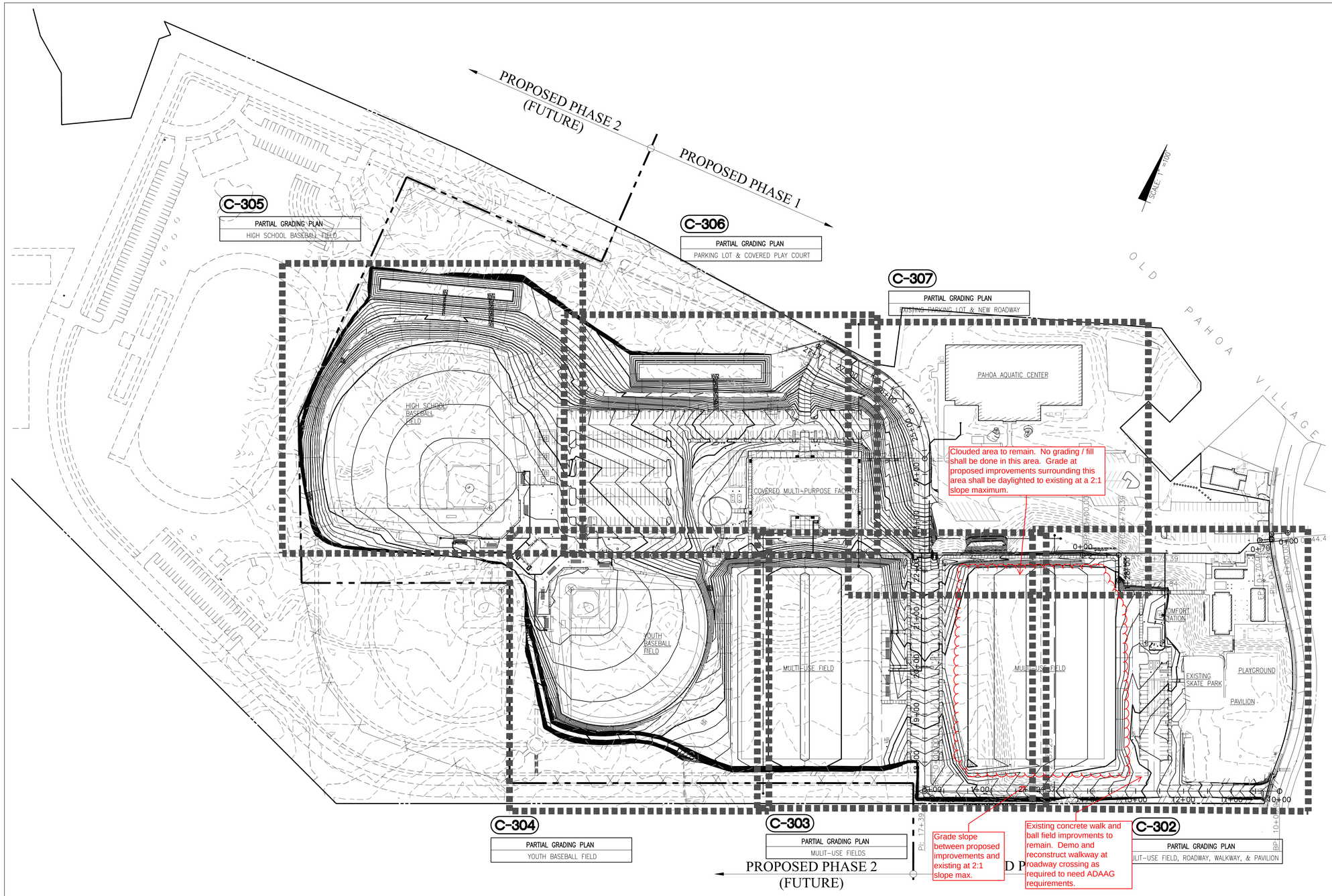
3.02 FIXTURE INSTALLATION

A. Set all plumbing fixtures in an approved workmanlike manner. Point up edges against wall with approved caulking.

B. Flanges at wall penetrations shall be flush against wall and shall not spin when rotated by hand.

C. Adjust equipment and plumbing fixtures and trim to operate properly and clean all fixtures just prior to final inspection.

END OF SECTION



A OVERALL GRADING PLAN

SCALE: 1" = 100'

0 100' 200'

Engineering Partners, Inc.
Progressive Solutions
455 E.LANIKAULA STREET
HILO, HAWAII 96720
www.epintegrated.com

KEN WEN CHANG
LICENSED PROFESSIONAL ENGINEER
CIVIL
No. 9361-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION. CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.

SIGNATURE

MARK	DATE	DESCRIPTION

REVIEWED: DATE

DEPARTMENT OF PARKS AND RECREATION

COUNTY OF HAWAI'I
OFFICE OF HOUSING AND COMMUNITY DEVELOPMENT
50 WAILUKU STREET / HILO, HAWAII 96720 / PHONE: 808.961.8379 / FAX: 808.961.8885

PAHOA PARK MASTER PLAN
PHASE I

JOB NO.: PR-4234 PAHOA, PUNA, HAWAI'I TMK: (3) 1-5-002: 020

CIVIL OVERALL GRADING PLAN

DESIGNED BY: JB
DRAWN BY: JB
CHECKED BY: YWF

SHEET NO. C-301

OF SHEETS

DATE: FEBRUARY 10, 2014

Geotechnical Investigation Report

Pahoa Park (Expansion) Master Plan – Phase I
Kuuhome Street, Pahoa, Hawaii

For:
Jason Antonio
WCIT Architecture
725 Kapiolani Blvd. Suite C400
Honolulu, Hawaii 96813

August 25th, 2013

96-1173 Waihona St., Unit B-7, Pearl City, Hawaii 96782
Phone: 808-455-1522, Fax: 808-455-1384, Email cel-pe@hawaii.rr.com

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CONTENTS

INTRODUCTION

Presented in this report are the results and recommendations of a geotechnical investigation completed at Pahoa Park (Expansion) Master Plan – Phase I, Pahoa, on the big island of Hawaii.

It was determined that the field exploration would be accomplished by constructing 3 test pits excavated until refusal on parent basalt, to determine subsurface profiles, indications for the presence of voids, and to determine the general condition of surface soils. Access to each test pit location was accomplished by blazing trails with a D8K Crawler Dozer. The dozer trails were also used as extended test pits in the subject investigation. CEL's scope of work and description of services is as follows:

A. Field Investigation

1.Develop the subsurface investigation.
2. Perform 3 Test Pits at locations selected by civil consultant plus dozer trails.
3. Review and correlate any available soil information on the site.
4. Provide a soils engineer to observe test pits and to maintain logs of the materials encountered.

B. Laboratory Testing

1. Perform the necessary laboratory testing to define the soil characteristics as applicable.

C. Evaluation and Report

1. Correlate and analyze the field results.
2. Develop geotechnical recommendations
   for: Seismic Parameters
   Probing and Grouting
   Cut/Fill Slopes
   Pavements
   Utilities
   Drainage and Erosion Control
3. Submit a written report summarizing the findings and recommendations.

PROJECT AND SITE DESCRIPTION

The site is located on the west end of Kuuhome Street in the town of Pahoa on the island of Hawaii (Drawing Number 1). The site is bounded by existing park facilities, including ball field and swimming pool, to the east, residences and commercial operations of Pahoa to the north, and undeveloped land to the west and

south. Based on site plans provided by Mr. Jason Antonio, WCIT Architecture, the proposed Phase I of the park expansion includes a high school baseball field, a youth baseball field, 2 multi-use fields, a multipurpose facility, picnic areas, and associate parking and infrastructure. The site was well vegetated with grasses, shrubs and trees at the time of our investigation.

LAVA FLOW HAZARD

The U.S. Geological Survey has evaluated and ranked areas of the island of Hawaii for their potential to be covered with lava flows. The rankings are based on several factors: proximity to active volcanism, topography, and past volcanism within the last 60,000 years. The scale that the USGS uses is from 1 to 9, with 1 being the most susceptible to lava flows and 9 being the least likely to receive a new lava flow. The highest ranking areas are associated with the crater and slopes of Kilauea and the SW and NE rift zones of Mauna Loa. The lowest ranking area is associated with Kohala volcano.

The project site is located within Zone 2 area. This area is adjacent to and downslope of active rift zones. During the past 750 years, lava flows have covered about 25 to 75 percent of Kilauea.

FIELD INVESTIGATION

CEL was present at the site on May 4, 2011 to perform the geotechnical investigation. A total of 3 test pits were constructed. The approximate test boring locations are shown as TP-1 through TP-3 on Plate 3 Test Pit Locations. Logs of the test pits are shown adjacent to their associated test pit location on Plate 3. Dozer trail alignment is also indicated.

Groundwater was not encountered in any of the test pit excavations.

Generally, the site grades undulated with variable historic lava flow patterns. The topsoil observed at the surface consisted of brown clayey silt with varying concentrations of gravel, cobbles and boulders. The high organic content, from decaying forest debris, rendered the soil as unsuitable for structural purposes. Pockets of red clinker/cinder were encountered throughout the site. Historic quarrying of cinder from this property was rumored. Underlying the topsoil and red clinker/cinder, is gray, fractured, parent basalt at depths ranging from surface outcrops to 5 feet.

LABORATORY TESTS

CEL completed the following analyses on bulk samples from the designated test pits.
Test Pit 1 – Red Clinker/Cinder – Tested for appropriateness as structural fill.

Test Pits 2 & 3 – Topsoil – Not tested due to obvious unsuitability for structural purposes

Particle Size Distribution – Classified as GP, poorly graded gravel mix with 2% passing the 200 sieve.

Proctor Test – Acceptable values for Maximum Dry Density of 106.9 pcf at 9.5% Optimum Moisture content and non-plastic.

Bearing Ratio Test – The measured CBR value of 28.1 indicates that the clinker/cinder would be adequate fill material for most structural applications detailed in the park expansion plans.

Analytical reports are attached.

RECOMMENDATIONS

Preparation of Existing Surfaces

Prior to grading, the site should be stripped of all organics, within reason, and brown topsoil. These on-site soils are unsuitable for structural purposes, but may be used in landscape areas. The red clinker/cinder should be stockpiled separately for subsequent use as structural fill under pavements or slabs. The cobbles and boulders may be stockpiled for subsequent crushing with other on site ripped rock fragments to create suitable structural fill.

Anticipated Excavation Conditions and Techniques

Once the site has been properly prepared, grading and excavation may begin. CEL anticipates that the majority of the cut on the sites may be excavated using a Caterpillar D-10 bulldozer (or equivalent) equipped with a single-tooth ripper. It has been CEL's experience that sites with similar conditions may require excavation by hoe-ramming, especially for utility installations. Additionally, CEL recommends that the contractor consider using a crusher to reduce the material that is ripped to the recommended maximum particle sizes as detailed in the "Materials, Placement, and Compaction of Structural Fill" section later in this report.

Cuts and Fills

All cut slopes should be evaluated by the geotechnical engineer of record at the time of construction to confirm slope conditions and subsequently, the recommendations made herein. If conditions at the time of construction are different from those observed during the subsurface investigation, CEL should be allowed to modify our recommendations accordingly.

Cuts: CEL recommends that any cut areas within structural footprints be over-

excavated a minimum of two feet below the proposed footing bearing grade and to a minimum distance of 10 feet in a horizontal direction beyond the perimeter of the proposed structures. These areas should then be ripped to a minimum depth of two feet (4 feet below the proposed footing bearing grade) and the ripped material should be re- compacted to at least 95% relative density. Ripped material in excess of 6" in diameter should be hoe-rammed or crushed to a maximum diameter of 6. A final 6-inch lift of 1- inch minus material may be used to cap off the building pad.

Unsupported permanent cut slopes should be constructed at an inclination of no greater than 1H:1V (one foot in the horizontal direction for each foot in the vertical direction) to a maximum height of 15 feet. Cut slopes exceeding 15 feet in height should have an 8- foot wide bench installed at mid-height of the slope. Surface water should be directed away from the cut slope by means of a diversion channel or other appropriate system constructed at the top of the slope.

A proof roll of the prepared subgrade should be performed using a D-10 or equivalent- sized bulldozer to detect near surface voids. Voids that are detected should be collapsed, over-excavated, and backfilled with structural fill compacted to at least 95% relative density. The areas should then be brought back to design grades using structural fill compacted to at least 95% of the soil's maximum dry density.

Fills: The exposed surface in the building pads to receive fill should be ripped to a minimum depth of two feet and to a minimum distance of 5 feet horizontally beyond the perimeter of the toe of any proposed slopes. The ripped material should then be hoe - rammed or crushed to a maximum particle size of 6" and should be re-compacted to at least 95% relative density. The fill areas for the building pad should then be brought back to the proposed grades using 3-inch minus structural fill compacted to at least 95% relative density overlain by a final 6-inch lift of 1-inch minus structural fill.

Where fill is planned to be placed over slopes that are greater than or equal to 5% gradient, the area to receive fill should be benched prior to fill placement. CEL recommends that benches into the native volcanic material be a minimum of 8 feet wide and a maximum height of 5 feet.

Fill slopes are anticipated to consist of either the on-site granular material that has been crushed to a maximum particle size of 6" or imported granular material. Deep fill slopes should be constructed by placing structural fill in loose lifts not exceeding 12" in thickness and compacting the fill as previously specified. Fill slopes using the on-site granular material should be no steeper than 2H:1V.

A proof roll of the prepared subgrade should be performed using a D-10 or

equivalent- sized bulldozer should be performed to detect near surface voids. Voids that are detected should be collapsed, over-excavated, and backfilled with structural fill compacted to at least 95% relative density. The areas should then be brought back to design grades using structural fill compacted to at least 95% of the soil's maximum dry density.

Access Drives and Parking Areas

Access drives and parking areas should be over-excavated a minimum of one foot below the finished subgrade. The surface of this layer should be ripped to a minimum depth of two feet and the ripped material should be hoe rammed or crushed to a maximum particle size of 6 inches and should be re-compacted to at least 95% relative density. Any voids encountered should be collapsed, over-excavated, and backfilled with structural fill compacted to at least 95% relative density. The areas should then be brought back to design grades using 6 inch lifts of structural fill (minus 1 inch) compacted to at least 95% of the soil's maximum dry density.

Materials, Placement, and Compaction of Structural Fill

Structural fill should consist of a well-graded mixture of soil and rock with a maximum particle size of 6 inches. It should be relatively free of organic matter, debris, or other deleterious material. The material passing the #200 sieve should be no more than 20% by weight. Structural fill may be placed in any areas of the site. The structural fill should b e moisture conditioned and placed in loose lifts not exceeding 12 inches in thickness for 6- inch minus material, and 8 inches for 3-inch minus and 1-inch minus materials. The structural fill should be compacted to at least 95% of the material's maximum dry density. Any area of fill that appears soft, loose, or unstable should be removed and replaced with suitable material.

Any area of fill that appears soft, loose, or unstable should be removed and replaced with suitable material.

All trenching activities should comply with the County of Hawaii Specifications. If trenches are to be greater than 4 feet in depth, sloping and/or benching may be required to provide safe access to/from the trench.

Compaction Standard and Testing

The maximum relative density of fill materials 1-inch minus material) should be determined in the laboratory using ASTM D1557 (Modified Proctor). In addition, roller test patterns to determine the maximum relative density of the fill materials should be accomplished in the field for each compaction device proposed to be used by the contractor on the project. The roller test pattern consists of measuring the in -place relative moist density of fill after 2, 4, 6, 8, and 10

passes on a lift of fill with the compaction equipment. The density after each set of passes is measured and plotted versus the number of passes, this forming a relative density curve. The 95% relative density specified herein refers to 95% of the maximum density developed by the roller test pattern using a D-10 or equivalent bulldozer. Should any piece of compaction equipment be inadequate to achieve the specified compaction, the equipment should be replaced or the lift thickness should be decreased so that the specified degree of compaction may be achieved.

Design Parameters

Structural design may be based on the following criteria:

Allowable Contact Bearing Pressure On-Site Granular Fill
Dead Plus Live Loads 3,000 psf
Increase for Wind or Seismic Loads 1,000 psf
Total for All Loads 4,000 psf

To maintain bearing capacity, probing and grouting should be completed at the center of each spread footing, 10 feet on center along the length of continuous footings, and 10 by 10 foot grids beneath structural slabs on grade. Probes should be completed to a minimum of 10 feet below the bottom of footing elevation.

Resistance to Lateral Loads On-Site Granular Fill
Friction Factor 0.45
Passive Soil Pressure 600 pcf

Seismic Parameters (2012 International Building Code)

Site Soil Classification	Site Class B – "Rock"	
Risk Category	I/II/III	
S_S = 2.325 g	S_{MS} = 2.325 g	S_{DS} = 1.550 g
S_1 = 0.996 g	S_{M1} = 0.996 g	S_{D1} = 0.664 g

Concrete Slabs-On-Grade and Pavements

CEL recommends that the concrete slabs-on-grade or pavements be underlain by a minimum 6" of base course compacted to 95% of maximum density according to ASTM D1557. The existing soil below the base course should be compacted to not less than 95% of maximum density. If unsuitable or soft soils are encountered during grading, CEL should be onsite to observe the removal of unsuitable soils and to evaluate the subgrade soils prior to placement of structural fill. A coefficient of friction of 0.45 may be used for concrete placed on either the on-site rock or on imported granular structural fill. A modulus of subgrade reaction of 250 pounds per cubic inch may be used for design purposes.

Asphalt Concrete Pavements

CEL recommends that for driveway and parking area pavements, a section comprised of 2 inches of asphalt concrete over 4 inches of base course compactedto 95% of maximum dry density. The subgrade shall be compacted to 95% of maximum dry density, as verified by CEL field testing or monitored proof rolling,

For heavily loaded areas i.e. near park entrance and waste collection points, we recommend an additional 8 inches of sub-base consisting of granular select borrow with a minimum CBR of 30% and maximum CBR expansions of 1% compacted to 95% of maximum dry density.

If unsuitable or soft soils are encountered during grading, CEL should be onsite to observe the removal of unsuitable soils and to evaluate the subgrade soils prior to placement of base course or select borrow.

Utilities

Excavation of utilities may prove difficult, as the trenches may extend below the surface of the parent basalt. Rock excavation methods such as using a hoe-ram to break up the parent basalt may be necessary, especially in narrow trenches. It is CEL's opinion that small trenching equipment will be sufficient for use in imported fill, but that it will not be effective in rock excavation.

Cushion and trench backfill material shall be in accordance with County of Hawaii specifications. Trench backfill shall be placed and compacted in eight-inch (8") loose lifts and compacted to ninety five percent (95%) of the soil's maximum dry density.

It is recommended that benching, sloping, or shoring be used for trenches greater than 4 feet deep. .

CONSTRUCTION QUALITY CONTROL

It is necessary that construction monitoring be a part of the contract to ensure that the recommendations as included in this report are followed. The construction monitoring should be under the supervision of CEL's personnel and licensed engineer. All cut, fill and backfill operations should be monitored under the supervision of CEL personnel with periodic density tests to determine the degree of compaction and moisture content obtained by the contractor. Likewise, proof rolling of the subgrade should be conducted under the supervision of CEL's licensed engineer. In addition, monitoring is necessary to identify any unsuitable soils or deleterious material that may have to be removed.

LIMITATIONS AND REVIEW

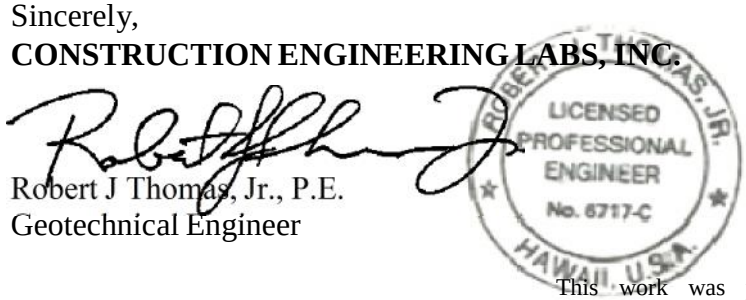
This report has been prepared in general accordance with accepted local engineering practice for the exclusive use of Mr. Jason Antonio, WCIT Architecture and the design team associated with the Pahoa Park (Expansion) Master Plan – Phase I.

The conclusions and recommendations of this report are based upon data obtained from the test pits and associated laboratory analysis, with the assumption that the subsurface conditions do not deviate from those observed. If any variations or undesirable conditions are encountered during construction, or if the actual construction will differ from that planned at the present time, CEL should be notified so that the changes can be reviewed, and conclusions and recommendations of this report modified or verified in writing.

Excluded from CEL's scope of work was the identification and classification of contaminated soils concerning environmental conditions; therefore, no attempt was made nor should one be construed, that this report addresses environmental concerns with regard to contaminated soil material and water. It is further pointed out to the contractor and subcontractors that utilities may exist on the site covered by this investigation; therefore, although existing utilities may not have been encountered in our probe holes, special precaution should be taken prior to construction to delineate the location of these utilities such that any active lines are preserved.

Should you have any questions regarding this report, or if we can be of further assistance, please contact us at your convenience. We appreciate the opportunity to have been of service to you on this project.

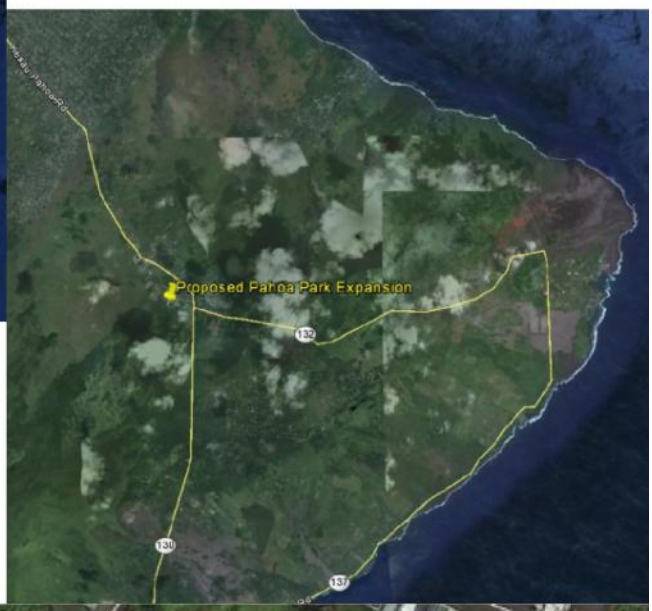
Sincerely,
CONSTRUCTION ENGINEERING LABS, INC.



Robert J Thomas, Jr., P.E.
Geotechnical Engineer

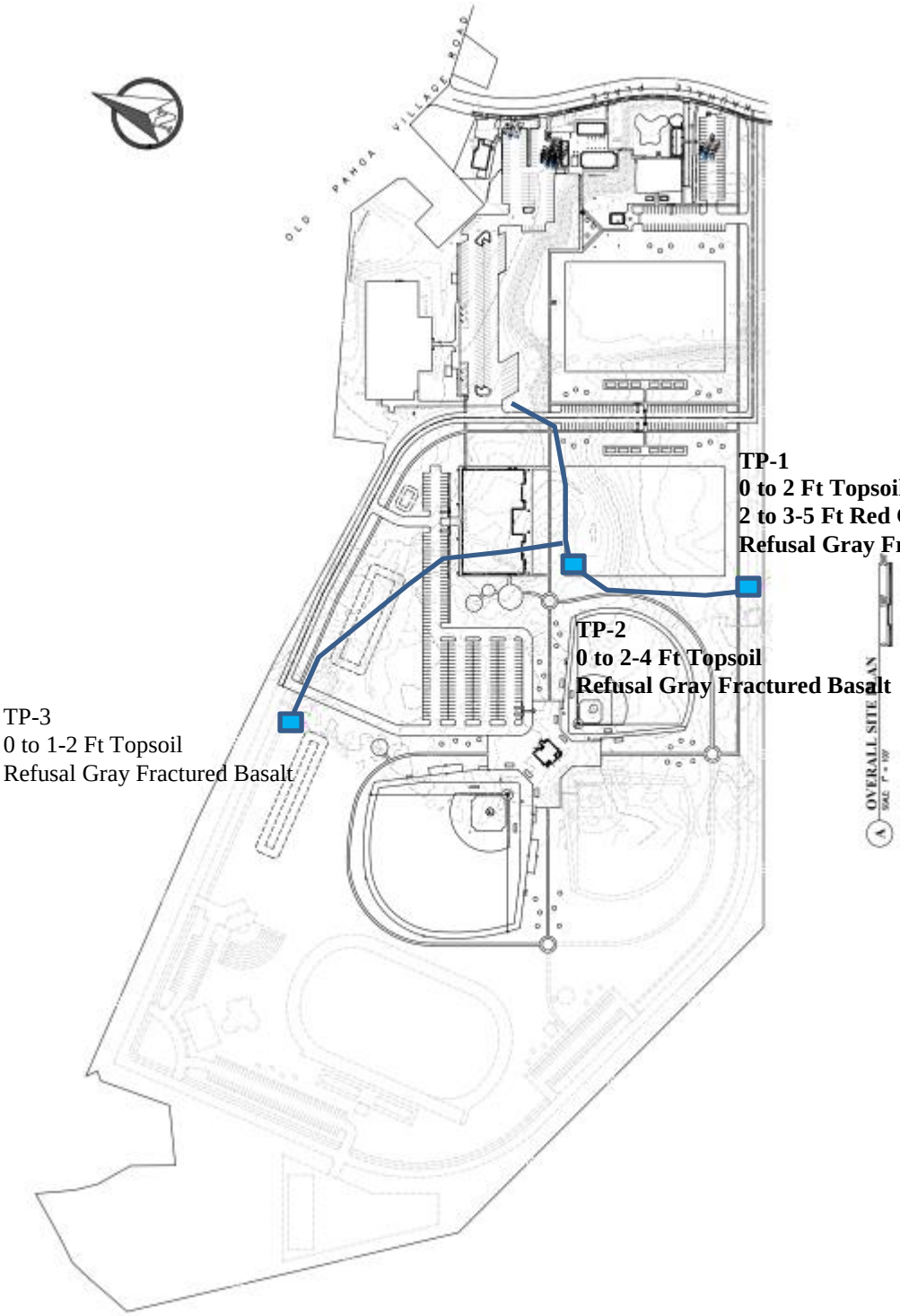
This work was prepared by me or under my supervision and construction of this project will be under my observation as defined by Chapter 10 PAR 2N of the Revised Laws of Hawaii 1953 (License expires April 30, 2014)

SITE LOCATION



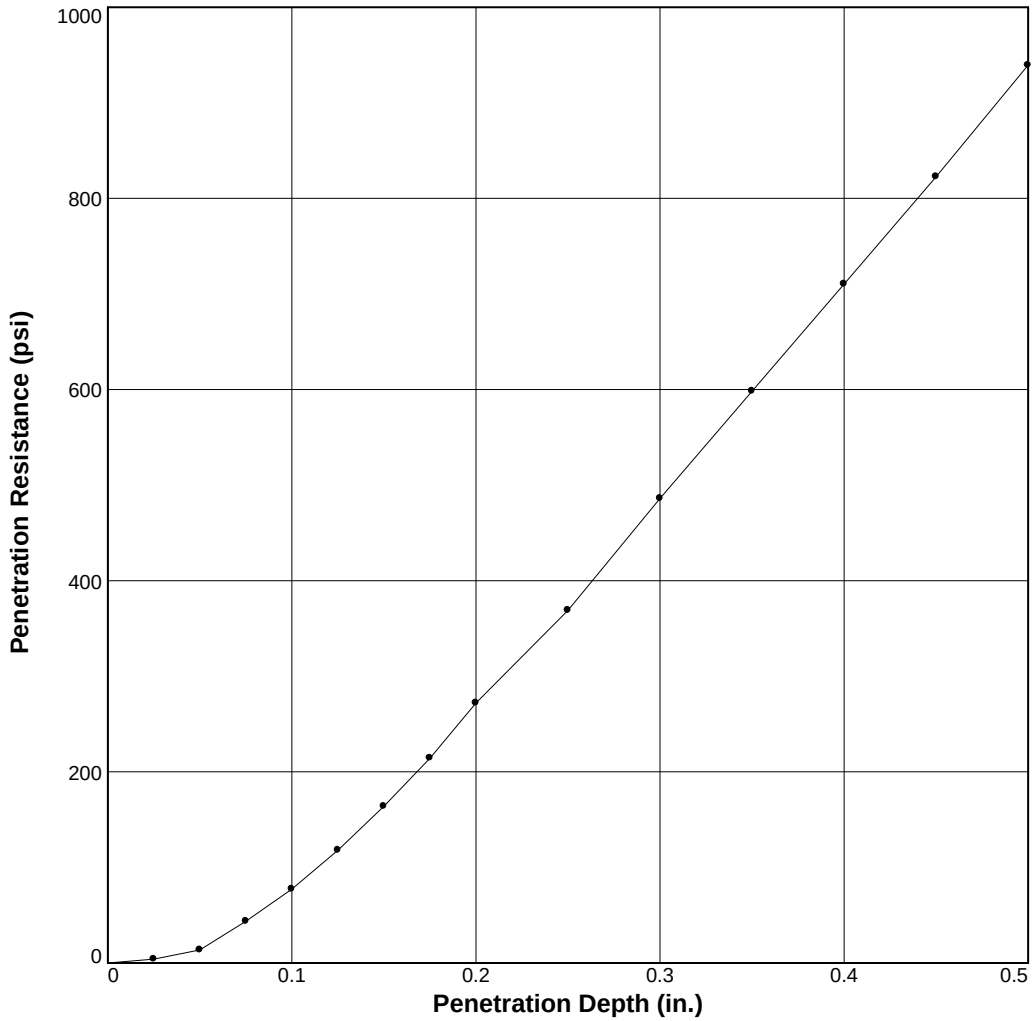
SITE CONCEPTION

APPROXIMATE TEST PIT LOCATIONS & LOGS



Approximate Test Pit Location connected by dozer trails

BEARING RATIO TEST REPORT
ASTM D 1883-07



	Molded			Soaked			CBR (%)		Linearity Correction (in.)	Surcharge (lbs.)	Max. Swell (%)
	Density (pcf)	Percent of Max. Dens.	Moisture (%)	Density (pcf)	Percent of Max. Dens.	Moisture (%)	0.10 in.	0.20 in.			
1 ○	103.5	96.8	6.3				20.9	28.1	0.073	10	0
2 △											
3 □											

Material Description	USCS	Max. Dens. (pcf)	Optimum Moisture (%)	LL	PI
Brown poorly graded gravel with sand (cinder)	GP	106.9	9.5	NV	NP

Project No: WCIT001

Project: Pahoa Park

Source of Sample: Onsite

Sample Number: 50481-1

Date: 6/25/13

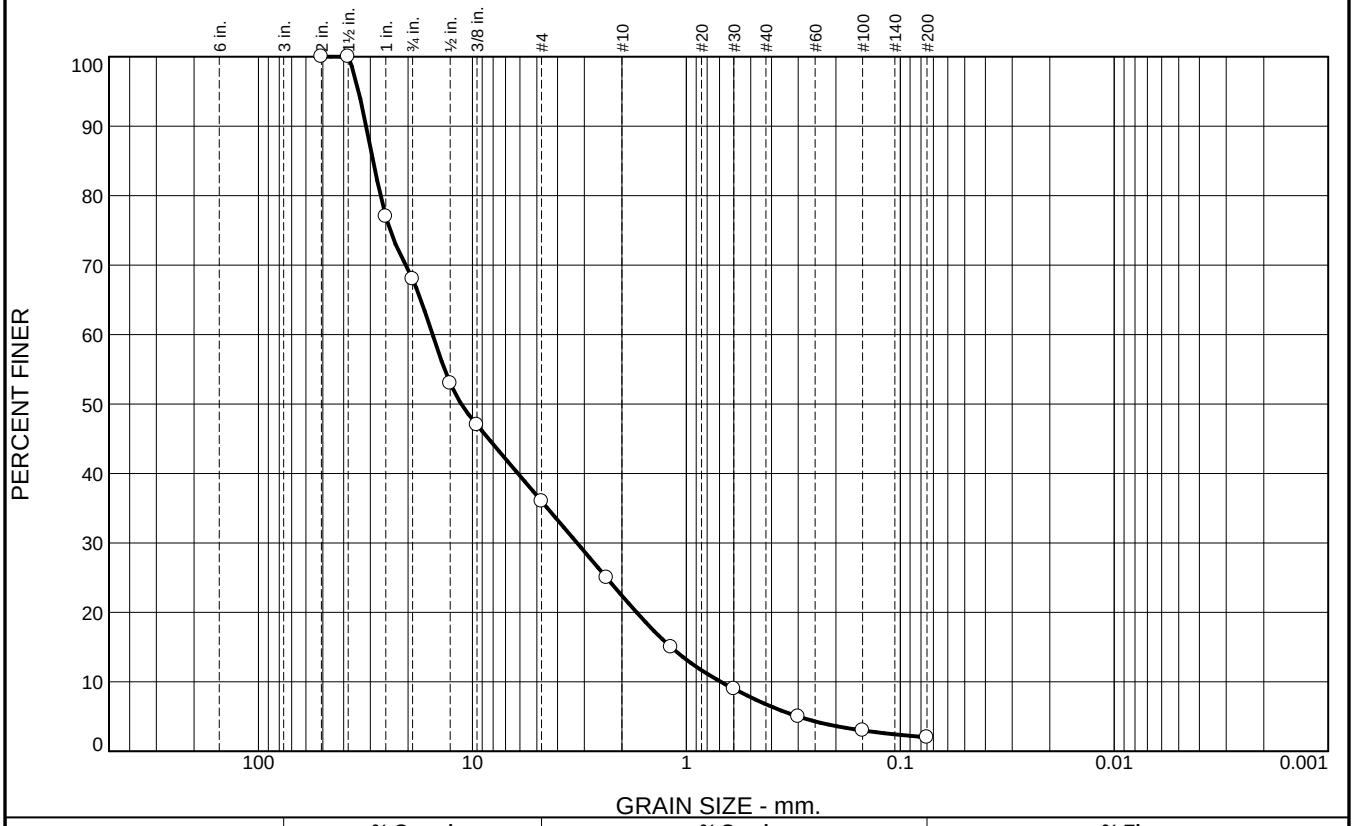
BEARING RATIO TEST REPORT

CONSTRUCTION ENGINEERING LABS, INC.

Test Description/Remarks:

Figure _____

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	32	32	14	15	5	2	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
2"	100		
1 1/2"	100		
1"	77		
3/4"	68		
1/2"	53		
3/8"	47		
#4	36		
#8	25		
#16	15		
#30	9		
#50	5		
#100	3		
#200	2.0		

* (no specification provided)

Material Description

Brown poorly graded gravel with sand (cinder)

Atterberg Limits

PL= NP LL= NV PI= NP

Coefficients

D_{90}= 31.3890 D_{85}= 29.1033 D_{60}= 15.3595
D_{50}= 11.2809 D_{30}= 3.2427 D_{15}= 1.1800
D_{10}= 0.6894 C_u= 22.28 C_c= 0.99

Classification

USCS= GP AASHTO= A-1-a

Remarks

Source of Sample: Onsite
Sample Number: 50481-1

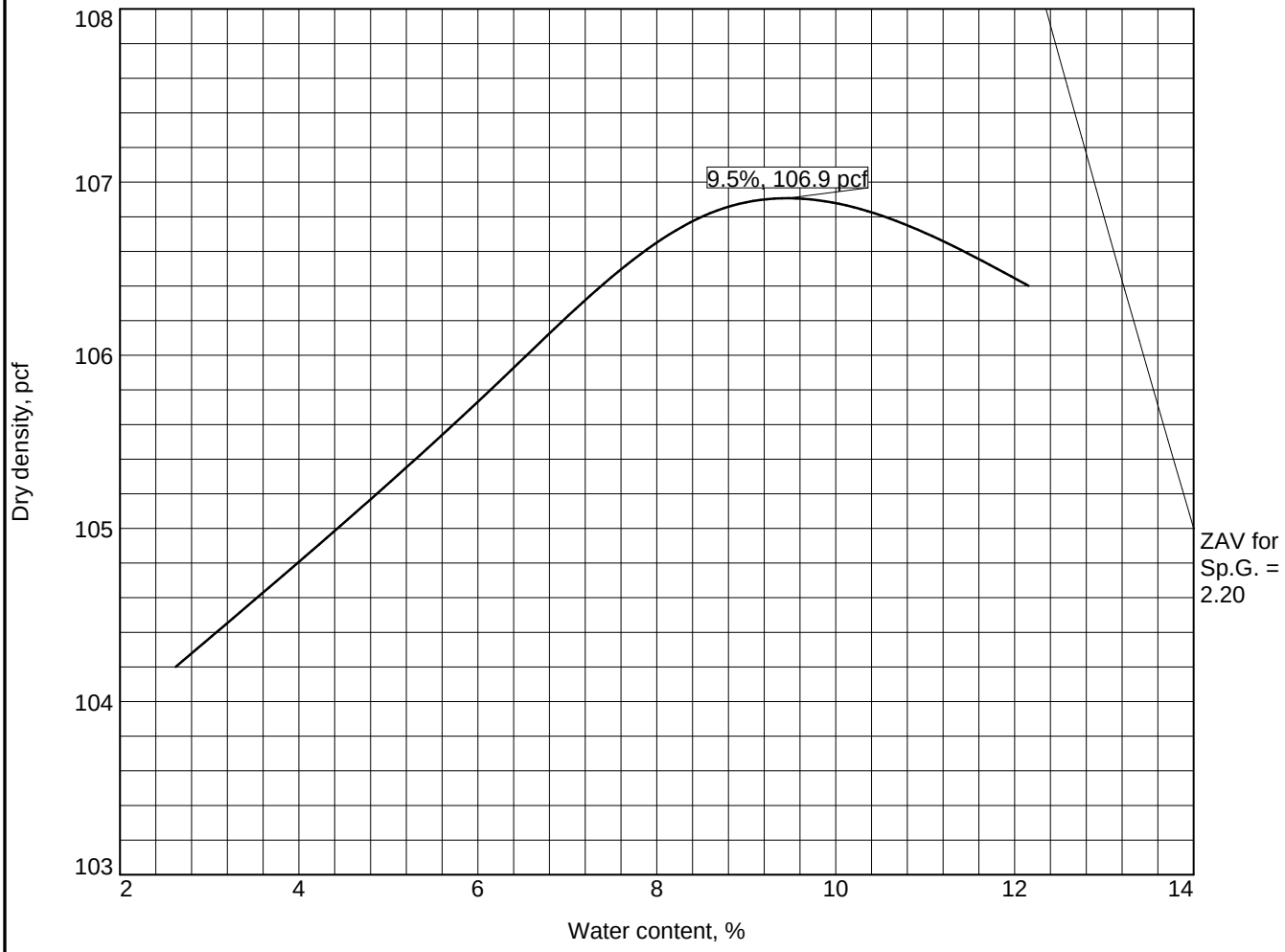
Date: 6/25/13

CONSTRUCTION ENGINEERING LABS, INC.
Pearl City, Hawaii

Client: WCIT Architecture
Project: Pahoa Park

Project No: WCIT001 **Figure**

MAXIMUM DENSITY TEST REPORT



Test specification: ASTM D 1557-09 Method C Modified

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > 3/4 in.	% < No.200
	USCS	AASHTO						
	GP	A-1-a			NV	NP	32	2.0

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 106.9 pcf Optimum moisture = 9.5 %	Brown poorly graded gravel with sand (cinder)

Project No. WCIT001 **Client:** WCIT Architecture

Project: Pahoa Park

Date: 6/25/13

○ **Source of Sample:** Onsite **Sample Number:** 50481-1

CONSTRUCTION ENGINEERING LABS, INC.

Pearl City, Hawaii

Remarks:

Figure